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Observations ON THE HISTORY OF SYPHILIS, ON THE WASSERMANN REACTION AND PARASYPHILIS, AND ON TREATMENT.

Being the Closing Remarks at the Fourth and Concluding Debate on Syphilis at the Royal Society of Medicine on July 8th, 1912.

BY SIR HENRY MORRIS, BART., M.B. LOND., F.R.C.S. ENG.,

PRESIDENT OF THE SOCIETY; CONSULTING SURGEON TO THE MIDDLESEX HOSPITAL, ETC.

GENTLEMEN,—In bringing to a close the important debate which has now extended over four sittings, I propose first to contribute some remarks on the history of syphilis; next to comment on some of the points raised in connexion with the Wassermann reaction and parasyphilis; and finally to make a few observations on the treatment of the disease.

HISTORY: PREVALENCE AND INTENSITY IN THE PAST.

The greater part of what I have to say refers to the question of the prevalence and intensity of syphilis in the past, because in the first place I find in it much which interests me, but chiefly because less attention has been given to this than to either of the other two aspects of the subject which were set down for discussion.

Whether syphilis did or did not exist in prehistoric and early historic times still remains an unsettled question. Probably it will always so remain. Intelligible as is a belief that the disease prevailed in Europe in pre-Christian and early Christian centuries, it rests upon very meagre evidence, supported by inferences from facts rather than by facts themselves. Nor has this debate so far added any evidence of a more convincing kind. It is said that about 2500 B.C. a Chinese writer, Nusi King, described the phenomena of venereal disease, and among them the symptoms of lues venerea. But what was the lues? Gonorrhœa, chancroid, lepra, or lupus might, perhaps, equally have been referred to under a term meaning "a spreading calamity," "a pest," or "a contagious disease." No reference is made to venereal disease in the Babylonian Code known as the Laws of Hammurabi—the oldest known laws in the world—which date from 2100 B.C., or 500 years before the Laws of Moses. Yet, had syphilis been a scourge in those days it would probably have come under some legal control, because the Babylonian legislation took account of several medical and surgical affections, and its medico-legal judicature was very severe on surgeons guilty of malpraxis, or who even were merely unsuccessful in the performance of operations.

Dr. Albert S. Ashmead, of New York, in discussing the Question of a Relationship between "Syphilitic" Llamas of the Department of Puno, Peru, and Pre-Columbian Syphilis in Man,[1] says, "The Japanese race has been saturated with syphilis for 1300 years; the Chinese race since 1124 B.C."; and he supposes that these races, by "their long generational experience with the disease, have acquired a great measure of resistance to the germ." The descriptions given of venereal diseases in the centuries between remote antiquit and mediæval times, by Greek, Latin, Arabian, and other authors, concern non-specific ulcers, buboes, and the brenning or burning, by which was meant gonorrhœa; and the inferences drawn from them as to the existence of syphilis are attributable to the confusion arising from grouping all affections which spring from commerce between the sexes under the general term "venereal disease."

Dr. Norman Moore, adopting the conclusions of the three learned men whom he quotes—namely, Jean Astruc, professor of Montpellier, Dr. John Freind, and van Swieten, is of opinion that further researches into ancient writings, even by scholars possessing the greatest linguistic attainments in Greek, Latin, and Oriental languages, are not likely to lead to the discovery of proof of the prevalence of syphilis in early times. He regards the existence of the disease in those times as not proven; and, indeed, negative evidence is all that can be expected or which is possible if there really was no such disease in antiquity. It might, then, be said of syphilis as Mark Twain said of Shakespeare, whom he speaks of as being "Just a tar baby"[2]: "We can go to the records and find out the life-history of every renowned racehorse of modern times—but not of Shakespeare. There are many reasons why, and they have been furnished in cart-loads ..... but there is one which is worth all the rest of the reasons put together—he hadn't any history to tell." But we can look to other records besides those written in books, and eaten into the bones of men, as I will show presently.

Dr. Norman Moore considers the endeavour of Francisco Lopez de Villalobos in 1498 to identify syphilis with the condition described by Avicenna (980–1037) in the fourth book of his "Canon of Medicine," under the name of saphati, as altogether unconvincing, and though he inclines to the belief that the period of the first appearance of syphilis in Europe was the end of the fifteenth century, yet he thinks much more evidence than is generally set forth is required before we can accept the statement that this disease was imported from America by Columbus.

SYPHILIS IN MAN AND ANIMALS INDIGENOUS TO SOUTH AMERICA.

It seems to me that further evidence has been brought forward within the last 15 or 16 years by Dr. Ashmead in support of the views (1) that syphilis prevailed in America as well as in Japan in very early times; and (2) that in America it was a disease of animals as well as of man. Dr. Ashmead[3] quotes David Forbes, a great authority on everything connected with the native Indian population, to show that the very special and fundamental racial characters of the native Indians of Bolivia and Peru are in complete accord with the nature of the countries they inhabit, and have needed *ages* for their evolution. Hence, concludes Forbes, these people—the Aymara Indians—must have been established in these countries for a very long time. Of the three great tribes of South American Indians the Incas were the chief, and were the conquerors, in the eleventh century, of the second greatest tribe—namely, the Aymaras of Bolivia and Peru. It is in the Aymara Indians that the indications of what may be called autochthonous syphilis are strongest; and, as Dr. Ashmead remarks, the conclusion which may be drawn from these facts is "that the probabilities of the existence of syphilis in this part of the world before Columbus are almost overwhelming."[4]

Forbes never met with any instance of an Indian disfigured by the disease, their treatment of it being successful. They employ mercury (metallic form) and calomel from native cinnabar. Chewing coca is said to prevent mercurial salivation.[5] He thinks syphilis must have been known among these Indians from a very early period: (1) because they have in their language a name for this disease; (2) because they are quite familiar with its treatment; and (3) because skulls are occasionally taken out of graves dating from the period antecedent to the Spanish conquest on which may be seen depressions or scars pronounced by several medical men to have resulted from syphilitic caries, and which in two instances which came under his (Forbes's) observation afforded proof that the disease had been arrested in its progress and new bone formed during the lifetime of the individual.

The same writers tell us that the llamas of Peru, and the alpacas (animals peculiar and confined to the highlands of Bolivia and Peru) suffer extensively from a disease which is identical with syphilis in man and which is healed by the Indians by a precisely similar mode of cure, consisting principally of inunctions with mercurial ointment; and Forbes says:

> The mortality among the alpacas caused by the disease when not extremely carefully treated, is said to be very great indeed, and the bones of the diseased animals are stated to be very much affected by caries exactly as in man. The question whether this disease may have been communicated from the alpaca to man, or *vice versâ*, is an open one. It is well known that such unnatural intercourse is common, and that under the Incas several laws were enacted against it. Even after the Spanish conquest an old law not permitting the llama drivers to start on their journeys unless accompanied by their wives was retained in force, and this regulation was understood to be intended as a safeguard against such abuses.

[1] American Medicine, January, 1909, vol. xv., p. 35.

[2] Mark Twain's "Is Shakespeare Dead?" 1911.

[3] Journal of Cutaneous and Genito-urinary Diseases, 1895, vol. xiii pp. 415, 416.

[4] Ibid., p. 417.

[5] Ibid., p. 416.

Commenting on two unsuccessful inoculations of llamas with human syphilis, Dr. Ashmead[6] asks: "May it not be that if the disease [syphilis] in pre-Columbian America was originally an animal disease, there may be breeds of llamas whose disease we suspect it to have been, who have by this time acquired really a measure of resistance or immunity, just as special breeds (Chinese and Japanese) of human beings?" The llamas of the department of Puno, Peru, were called by the natives "syphilitic llamas," and Dr. Ashmead proposed that other experiments on the Incan and Aymaran Indians of Peru with the virus taken from one of the syphilitic llamas should be made, with the view of determining whether the disease supposed by the natives to be animal syphilis was in reality human syphilis or not. If these experiments have been made the results, so far as I can find, have not been published.

Dr. Ashmead says that human syphilis as it occurred in Japan in the seventh century was a veritable epidemic, as it was in Western Europe in the fifteenth century, and he continues: "Writers of these periods, in both geographical situations, claim that the disease was veritably epidemic then, and was quickly followed by a spread of leprosy. In Japan it is true, for I have translated several Japanese works on the subject and know it to be a fact."

INFERENCES FROM THE POTTERY OF THE INCAS.

Proof has been sought in the pottery of the Incas of the existence of syphilis in Bolivia and Peru in pre-Columbian and in even very remote times. It is admitted that the Inca pottery and the types of the representations of human features thereupon are of much earlier date than the Spanish conquest of these countries; but the cause of the deformities and disfigurements of the human faces portrayed on these ceramic vases is a question still in dispute. Were they the results of leprosy, of lupus, of syphilis, or of mummified changes after death? Virchow thought they were a strong argument of a pre-Columbian lepra, and he emphasised the fact that the similarity of the changes which lepra and lues brought about on the surface of the body was often very marked, and that in the Middle and later Ages mistakes as to the identity of the two conditions occurred. He then made a special point of stating that he himself had never seen a syphilitic bone dating from the pre-Columbian era.

In 1895 Dr. Ashmead reopened the question by a letter to Virchow, and since then has published several communications on the subject of the Inca pottery and pre-Columbian syphilis in America. He is of opinion that these ceramic representations are of syphilis, not of leprosy. One of his correspondents, Professor A. F. Bandelier, a resident of Lima, Peru, and having a first-hand profound knowledge of the country and its inhabitants, wrote[7]:—

> Syphilis and related infirmities are common everywhere among the Indians as well as among other portions of the inhabitants. The disfigured faces on the pottery are generally regarded as representing that disease, and I never heard leprosy mentioned in connexion with them. In addition to the kind of vases representing such phenomena, others are found of a still more obscene character, and one of them I sent to the Museum from Chan-Chan showing man in connexion with the llama. ..... The idea of copying on ceramics the effects of syphilitic affections upon human faces is, without any doubt, pre-Columbian in Peru. ..... That even quite a number of vessels representing syphilitic diseases should be post-Columbian is therefore only a proof of the fact that they are survivals of artistic ideas carried out long previous to the Columbian era, and that hence the disease existed in Peru untold centuries ago as well as it exists to-day.

Dr. Ashmead[8] quotes also Mr. Teoberto Maler, who has been exploring sepulchres in various parts of Yucatan (a peninsula of Mexico between the Gulf of Mexico and the Caribbean Sea) for many years, and who is the correspondent of the German Societies. This gentleman wrote in 1895 of syphilis:—

> According to the ancient Spanish historians it seems, without any doubt, that syphilis is an original American disease, and the Spaniards found it for the first time among Indians of Hayti, Cuba, &c. It is also true that the ancient Peruvians imitated frequently in clay figures syphilitical accidents—for instance, human faces with the nose eaten away, &c. I saw at Paris, in the Ethnographical Museum of the Trocadéro, many interesting specimens of Peruvian pottery of this kind. This naturally does not exclude that the same disease existed also in China or Eastern Asia in very remote times.

Of leprosy Mr. Maler says:—

> It only exists in the Spanish class and mixed people. I never saw or heard of a true Indian family affected with it. ..... The true Peruvian antiquities refer, as I believe, to syphilis and not to leprosy, but without doubt leprosy existed in very ancient times in most of the Asiatic lands.

[6] Dr. Alfred S. Ashmead, American Medicine, 1909, vol. xv., p. 36.
[7] Quoted by Dr. Ashmead, Journal of Cutaneous and Genito-urinary Diseases, 1896, vol. xiv., pp. 56, 57.
[8] Ibid., p. 95.

Dr. Ashmead is of the same opinion, for he writes[9]: "The representations which I have found on the Huacos pottery in the American Museum are, in my opinion, not leprosy, but syphilis": but he seems to imply that both syphilis and leprosy were very ancient Asiatic diseases, and that they reached America from no other place but East Asia.

Professor Eugen Hollander, of Berlin, takes a different view of the representations on the Inca pottery. In a paper read at the Budapest Congress in 1910, after remarking that the Peruvian amphorae are of a pre-Columbian epoch, he says that the deformities of the central portion of the human face represented upon them are held by different scholars and physicians, with great divergence of opinion but with equal confidence, to be the result of destruction by lupus, by lepra, and by lues; so that there is much doubt as to the critical estimation of these objects. He himself attempts to show that the mutilations depicted do not represent disease, but are death portraitures of mummies, and in certain instances symbolical representations.

Of the various specimens of Inca pottery on view in the ethnographical department of the British Museum, and others, not exhibited, which were kindly shown to me by Sir Hercules Read and Mr. Athol Joyce in their workrooms at the museum, one only appears to be in any manner a portraiture of a syphilitic face. In looking at these specimens, as well as the much larger collection in the Trocadéro Museum, Paris, one has to bear in mind that cutting away the nose and upper lip was a form of punishment among the natives, so that the character of the remaining edges, as well as the loss of these features, should be taken into account in judging whether the deformities represented are due to disease or injury.

If syphilis was known in America and was also prevalent in Japan and Eastern Asia in early times it is a question whether the disease was transmitted from Asia to America or from America to Asia. But if the natives of South and Central America had no communication with the outside world previous to the arrival of Columbus, as the writings of Henry C. Mercer, Teoberto Maler, and D. G. Brinton[10] afford good ground for saying was the case, syphilis in America must have had an independent and distinctly separate origin ages before it was imported into Europe.

A SUMMARY OF DR. ASHMEAD'S EVIDENCE.

If we pass in review the evidence put forward in Dr. Ashmead's communications in favour of the existence of syphilis, in early times, in America and the eastern parts of Asia we find it embraces: 1. The traditional belief that many of the figures on the early specimens of Inca pottery were representations of the destructive processes of syphilis. 2. The statements of scientific investigators who are familiar with the countries and language of the native Indians that syphilis certainly existed and flourished in America in pre-Columbian times. 3. That there is no positive trace of pre-Columbian leprosy in America. 4. The traditional belief that the llamas and alpacas suffered extensively from a disease identical with syphilis in man. 5. That the Indians cured this disease, both in animals and man, by a treatment consisting principally of inunctions of mercury. 6. The accounts in Japanese books of syphilis in Japan in the seventh century, which books Dr. Ashmead has himself translated. 7. The failure of Dr. Ashmead to inoculate with human syphilitic virus either prostitutes in Japan or llamas in Peru. Dr. Ashmead had in his clinic in Tokyo, Japan, charge of 2000 licensed prostitutes; he tried, but invariably failed, to inoculate with syphilitic virus harlots who had had syphilis. This showed, he thinks, that a syphilitic could not have a chancre twice. In this way he was able to determine the exact nature of a suspicious sore. Chancroids would repeat themselves; chancres never did.

A letter from Dr. Francisco Grana, of Lima, Peru, to Dr. Ashmead tells of a treatise just completed on syphilis during the Inca period, based on bibliography and *numerous anatomical specimens*. The specimens included several skulls which display exostoses, believed to be of a syphilitic character; they were taken from tombs (Huacos), together with pottery, textiles, and other objects. These skulls (as well as the human skulls and the bones of alpacas referred to by Forbes) contradict the conclusion to be drawn from the statement made by the anthropologist to the Smithsonian

[9] Ibid., p. 53.
[10] Quoted by Dr. Ashmead, ibid., pp. 94, 95, 97, 98

Institute in Washington, which is quoted by Dr. Norman Moore.

Is it not possible that the extreme rarity of bones of ancient skeletons showing changes indicative of syphilis is due to the free use of mercury in antiquity? The ancient use of mercury in a given country, however, by no means necessarily implies that syphilis was a disease of the inhabitants; because it was largely used internally and externally, for internal complaints, for skin eruptions and diseases, and as a germicide for lice and other vermin. In China, Japan, South and Central America, and in India this mineral was much employed as a remedy. Mercury is found in China. In India its wonderful powers caused it to be considered by the followers of a religious doctrine called Ruseshism as "one of the manifestations of God."[11] The Romans and Arabs used it externally. The Hindus and the Chinese from very early times took it internally in medicine. The Yogis of India drank twice a month a potion of sulphur and quicksilver, which they said gave them long life.

Is it not probable that as syphilis is known to be much milder in character in hot countries and in the Tropics than in more northerly and colder climates, tertiary syphilitic changes in bone rarely occurred in such countries? And if with a milder form of disease there are associated the prevalent use of mercury and the great measure of resistance which long generations of infection with the disease beget, have we not an explanation of some importance why these bony witnesses of ancient syphilis are wanting or very scarce, even in hot countries, where neither circumcision, depilation, regular use of baths, &c., after coition, or other conditions which prevent contagion were commonly in force?

Evidence from Contemporary Writers that Syphilis was Imported in 1493.

The Columbian origin of syphilis in Europe would be disproved by showing either the non-existence of syphilis in the New World in pre-Columbian times or the existence of the disease in Europe prior to the return of Columbus in 1493. Having dealt with the former, I will now say a few words on the latter question. The principal evidence upon which is based the belief that syphilis was first introduced into Europe from Hayti in 1493 are the writings of three distinguished contemporary physicians, an Italian and two Spaniards. Dr. Norman Moore has quoted at length from the work of the Italian (Girolamo Fracastoro) Hieronymus Fracastorius, so that I will make no further reference to it. The two eminent Spanish physicians are Francisco Lopez de Villalobos and Diaz de Isla. They furnish strong proof of the importation of syphilis from Hayti by the fleet of Columbus. De Villalobos, whose habits of life exposed him to the risk of being himself an example of the disease, published his book, "Sumario della Medicina," in 1498. This work contains a supplement on syphilis (entitled "Un Tractado sobre les Pestiferas Bubas") which he calls "pestiferous bubas," and it is important to notice that it is quite separated from his account of "imposthumes," ulcers of the genitals, and gonorrhœa, which is contained in the body of the work. The book is a poetical composition, for like Avicenna (980–1037) before him, and Fracastorius (1530) later, de Villalobos adopted the plan of writing in verse. Only two copies of it are known to exist, one in the Royal Library of Madrid, the other in private hands. Its contents were made known by Dr. Bonifacio Montejo, of Madrid, in the later half of last century.

De Villalobos describes the primary, intermediate, and secondary symptoms of syphilis; speaks of it as being a "new and contagious" disease, and mentions that the period when it first began to attract attention was in 1495, or a little earlier. The impression that de Villalobos made any endeavour to identify syphilis with saphati must, I think, have arisen from his having spoken of the secondary rash as "the Egyptian itch," and his comparison of the pruritus of some syphilitics with that caused by the Egyptian itch. As a matter of fact, he took great pains to make clear the diagnosis between syphilis and the dartrous affection known as the saphati of Avicenna, and which was the frequent precursor of leprosy. With much emphasis he states that the pimples of saphati do not infect, as do those of syphilis, and are of a brighter red colour.

Dr. Bonifacio Montejo has also directed attention to the authentic copies of Diaz de Isla's book (dated 1539 and 1542). The work had previously been little known in Europe except through the faulty Latin translation of Welschius.[12] Diaz de Isla, whose book was apparently written and completed in 1510, speaks of syphilis as having first shown itself in Barcelona and as having been brought to Europe from Hayti in the middle of April, 1493. Like Fracastorius and de Villalobos, he regarded it as "hitherto unknown, entirely new, and never before read of in books of medicine." He tells that he had under his own treatment, before they arrived ashore, men belonging to Columbus's fleet and others who were suffering from syphilis, and that he also treated in Barcelona, prior to the King of France going to Naples, many patients affected with the disease. He explains how the French camp in Italy became infected by many Spaniards joining it from Barcelona.

Objectors Refuted.

By way of discrediting this evidence it was pointed out that Christopher Columbus landed at Palos, some miles south-west of Seville, and tarried at Seville a fortnight before proceeding to Barcelona. Why did the disease not break out in Seville, it was asked? There is evidence to show that it did. A Servillian physician, Monardes by name, writing in 1580, said syphilis was called "serampion de las Indias"; and Dr. Montejo has shown that as early as 1502 there was a hospital set apart for the treatment of the syphilitically affected in Seville and that the disease was called "serampion de las Indias" because, as the record has it, "when this hospital was built there was no such disease, for it only became known after the discovery of the Indies in 1492."[13] For further details of the writings of these Spanish physicians I refer the reader to Mr. George Gaskoin's articles in the *Medical Times and Gazette* for 1867 (July and August).

Other evidence to discredit the Columbian importation of syphilis into Europe from Hayti was brought forward in the letters of Petrus Martyr, who made out that the disease was known in Spain in 1488, and in Bodmann's "Antiquities of the Rheingau," containing reference to a case as having occurred in Europe in 1472; but both statements have been proved to be forgeries.[14]

Syphilis Probably in England long Prior to Discovery of America.

But notwithstanding all these facts in support of the Columbian importation of syphilis into Europe, it is impossible to shut one's eyes to other facts which point to the existence of the disease in England, France, and other countries, a century and a half before Christopher Columbus set out in search of the New World. In England, for example, John of Gaddesden (1340), in his work "Rosa Anglica," when referring to the infection of leprosy from coitus, told of the precautions which should be taken to prevent infection. There is ample proof that there was a contagious venereal disease which went by the name of leprosy; that so-called leprous men and women were capable of communicating an infectious malady to those who had carnal connexion with them; that after coition the symptoms always first displayed themselves in the parts through which the poison was conveyed; that only when the pudenda were diseased did the leprous woman convey the infection in coition; that in true leprosy those parts are not disordered; that the disease conveyed by a leprous person in coition was followed by the breaking out of scabs and ulcers all over the body, and bore a greater similitude to leprosy as it is described by the ancients than to any other disease; that some ancient writers, as I stated in my introductory remarks, endeavoured to prove that the pox is only one species of leprosy, and that there may be a transition from one of these diseases into the other; that the rebellious nature of these cases of so-called ulcerous and scabby leprosy led surgeons to try a great number of remedies, but that all of them were useless unless mercury was joined with them; that as the dressing of such ulcers was tedious the patients were ordered to daub the ointments over the sore and cover them with linen till the next

[11] History of Aryan Medicine. By Sir B. Singh Jee, K.C.I.E., Thakore Saheb of Gondal, p. 146.

[12] George Gaskoin, Medical Times and Gazette, July 27th, 1867, p. 90.

[13] "Siclo Medido," December, 1860, quoted by George Gaskoin, Medical Times and Gazette, July 20th, 1867, p. 63.

[14] See George Gaskoin's articles in the Medical Times and Gazette for 1867, vol. ii., p. 201, and Iwan Bloch's History of Syphilis in "A System of Syphilis," by D'Arcy Power and J. Keogh Murphy, vol. i., chap. 1.

dressing; that following this treatment the ulcers were in a little time healed, the patient's mouths became sore, but that otherwise the patients were cured. It was in this accidental way that the method of salivating by unction was discovered.

It is thus obvious there was a disease which went by the name of leprosy, which was communicated to man by coition with a (so-called) leprous woman, but which was not in reality leprosy. It is also now well known that many deaths from venereal disease were formerly ascribed to leprosy; that leper hospitals were numerous in England up to the time when syphilis was distinguished from leprosy; and that as more and more patients were recognised as syphilitic, and treated as such, the demand on the leper hospitals correspondingly diminished. In France, as shown by Raymond of Paris, many syphilitics were buried as lepers in the leper cemeteries of the Middle Ages.

Another Englishman, Bartholomew Glanville, who flourished about the year 1360, wrote a book ("De Proprietatibus Rerum") describing as leprous persons with typical tertiary syphilitic symptoms. Among the causes of this sort of leprosy he enumerates the ordinary modes of syphilitic contagion; he describes the infection passing from father and mother to the child, "as it were by Lawe of Herytage"; and speaks of a "childe fedde wyth corrupte Mylke of a Leprouse Nouryce" as being another way of infection. In a word Glanville, in the middle of the fourteenth century, "under the name of one species of the leprosy, gives a summary of the symptoms of the pox, and the several ways whereby it is at this time communicated."[15]

When we think of the lack of facility for travel, of the smaller urban population, of the fewer opportunities of irregular and indiscriminate sexual intercourse, and consequently of the fewer cases of venereal diseases in those days, and when also we remember how comparatively little opportunity there was for interchanging professional opinions and experiences, we can understand how medical practitioners overlooked the association and causal relationship of secondary and tertiary syphilis with a local sore contracted weeks before, which had healed and to all appearance was finally cured, and perhaps had even been forgotten. It is thus also intelligible how medical men came to associate those syphilitic symptoms with the symptoms of leprosy—the disease which seemed to them to have the greatest analogy to the constitutional and local manifestations of what we now recognise as syphilis.

Before surgeons could regard the primary chancre as the cause of the subsequent symptoms of syphilis, and syphilis as a separate and distinct disease, the lessons and the experience of some such group of conditions as those which attended and followed the Columbian importation of the disease were perhaps necessary. Cause and effect would be less likely to be overlooked when all phases of the disease were seen in patients confined on board ship during a long voyage; when the disease spread among troops living near cities and massed together in large numbers; when the course and progress of the disease were intensified and exaggerated by the exposure, deprivations, and hardships of war; and when, perhaps, in part owing to the more severe action of a virus taken from one race and infecting a different race, the virulence of the disease assumed, as we are told it did in 1493–95, the characters of an epidemic.

VARIATIONS IN VIRULENCE AT DIFFERENT PERIODS.

The virulence of syphilis has varied not only as between races, but in the same race at different epochs. Dr. Ashmead, speaking from personal experience, says that "a Japanese prostitute whose symptoms may appear very mild would always inoculate the European with a vicious type of the disease, even producing in him the type of epidemic syphilis of the fifteenth century in Europe." This, he thinks, is because of the shorter generational experience, extending to only 500 to 600 years, and the consequent inferior measure of immunity or resistance of Europeans as compared with other races—the Japanese and the Chinese, who have been saturated, according to Dr. Ashmead, with syphilis for from between 1300 to 3000 years. The disease in the seventh century in Japan was of great virulence, and is said to have been like the epidemic in Europe in the fifteenth century. Fluctuations at other epochs have been largely caused by fluctuations in the nature of the treatment. In modern times, when iodide has supplanted mercury, syphilis has been seen in aggravated forms. During my own professional life the frightful cases of skin, bone, and visceral syphilis which one used to see have disappeared under the systematic administration of mercury and the employment of antiseptics.

[15] A Letter concerning the Antiquity of the Venereal Disease, by William Becket, Philosophical Transactions, 1720–21, vol. xxxi., p. 59.

SHAKESPEARE AND SYPHILIS.

Mr. Hutchinson pointed out that I had omitted from my introductory remarks any reference to one of Shakespeare's best allusions to syphilis. No doubt in the quotation given by Mr. Hutchinson from the fifth act of *Henry V.* Pistol, when speaking of "the spital of malady of France," was referring to a hospital for venereal diseases, and equally, no doubt, alluded to syphilis, "Morbus Gallicus" being one of its many names. My object, however, was not so much to make mention of all the passages in Shakespeare's plays in which some sort of allusion is made to syphilis, as to point out his frequent use of the words "pox" and "pox on't" in the manner of an oath and in much the same way as some persons are in the habit of saying "damn" and "damn it" in the present day. That Shakespeare when using the word "pox" almost always, if not invariably, meant syphilis, is to my mind quite certain; and this use of the word as an execration, or an ejaculation implying disgust, shows how uppermost in men's thoughts and how common the disease was in his day. In the same manner as Shakespeare, Ben Jonson and Colley Cibber made use of the same expressions—the former, for instance, in *Every Man in His Humour* and the latter in *The Careless Husband*. Elsewhere Shakespeare uses the word "goujees," meaning "pox," as in Act V., Sc. iii., *King Lear;* and "good year" in the same sense as "goujees" and "pox," in 2 *Henry IV.*, Act II., Sc. iv., line 64.

As regards Shakespeare's graphic account of syphilis in *Timon of Athens* and his repulsive allusion to the female sexual organs in *King Lear*, why should we associate them with Shakespeare's own personal experiences? The characters in a drama must not be supposed always to represent incidents in the life of the author any more than does the hero of a novel. The author made out Timon to be not merely a misogynist but a misanthrope, bearing a bitter grudge against not only women but all mankind, because of the ingratitude he had experienced in men; King Lear he described as becoming mad because of the ingratitude of his daughters.

As opposed to the attempt to associate these descriptions with the individuality of the author or to connect the physiognomy and parentage of Sir William Davenant with Shakespeare, I would point out that if Shakespeare was the author and actor of the plays which go by his name there is nothing in the portraits of the dramatist nor, so far as we know, was there anything in the voice of the actor to suggest that he himself was the subject of facial and laryngeal syphilis, so realistically described by him, or the parent of a congenital syphilitic offspring. If, on the other hand, William Shakespeare was too illiterate to have written the plays, what will the advocates of the Baconian authorship of them say to the insinuation that the writer of the "Novum Organum" and the editor of the authorised version of the Bible of 1611 was describing his own diseased plight in words he made Timon of Athens, in the play of that name, utter?

DOES SYPHILIS HEIGHTEN THE IMAGINATION?

Mr. D'Arcy Power has asked me to ascertain from the psychiatrists the nature of the disease from which the patient was suffering who is described by Horace:—[16]

> Fuit haud ignobilis Argis,
> Qui se credebat miros audire tragoedos
> In vacuo laetus sessor plausorque theatro.

Here was a man whose delight it was to sit in an empty theatre and applaud the wonderful tragedians to whom he imagined he was listening. But any suspicion as to this delusion having been caused by syphilis is, I think, removed by what Horace tells us a few lines further on:—

> Hic, ubi cognatorum opibus curisque refectus
> Expuli elleboro morbum bilemque meraco
> Et redit ad sese.

The man was cured by means of pure hellebore, which, so far as I am aware, has never had ascribed to it any curative influence on syphilis. If it were syphilis from which he

[16] Epist. Lib. ii., Epist. ii., ll. 128–30.

suffered this patient's recovery lends a degree of support to Dr. Pernet's suggestion that syphilis may have played some part in the development of the musical genius of Beethoven, who was said to have been a congenital syphilitic; for Horace goes on to say:—

> Pol, me occidisti, amici,
> Non servasti, ait; cui sic extorta voluptas,
> Et demtus per vim mentis gratissimus error.

When the patient recovered owing to the treatment he had received at the expense of his relatives he exclaimed, "By heavens, friends, you have destroyed, not saved me; to rob me thus of my pleasure, and take from me by force such a very agreeable delusion of mind."

THE BEARING OF "606" AND WASSERMANN'S REACTION ON TABES AND GENERAL PARALYSIS.

Dr. Mott would lead us to the conclusion that the tardy, delayed, or late syphilitic manifestations of disease of the nervous system which are usually termed parasyphilitic and metasyphilitic have increased in these times, and for two reasons: (1) the struggle for existence involving more and more the nervous system makes the cerebro-spinal centres the *locus resistentiæ minoris* of disease; and (2) a widespread racial immunity to the severer forms of secondary and tertiary syphilis has been brought about by the general syphilisation of the race. This racial immunity is attributed "to the reaction of the cells of the body to the syphilitic virus."

The parasyphilitic affections of the nervous system such as tabes and general paralysis of the insane are generally looked upon as degenerative processes and as such are uninfluenced by antisyphilitic treatment. If the same degree of racial syphilisation which diminishes the severity of secondary and tertiary forms of syphilis is a condition favourable to degeneration of the cells of certain parts of the spinal cord and brain; and if, as we are told, no case of syphilis has ever been really cured by mercury, can we look to salvarsan to prevent latent syphilis and the reaction of the body cells before the degenerative process has been established? If not, the race is in a parlous state, in spite of the advent of "606." If tabes and general paralysis of the insane come on after about the same number of years whether mercury has been given or not, will experience teach us that they will do the same after salvarsan? That they will not occur in persons who have been treated with salvarsan from the outset of syphilitic infection is our only hope of abolishing tabes and general paralysis.

We must all join Dr. Mott in wishing "that the early administration of '606' followed by mercury may in a measure do what mercury alone has in a measure failed to do, as regards averting parasyphilitic affections in later life—viz., it may by rapidly and effectually killing off the spirochætes in the blood and lymph prevent the hypersensitising of the cells of the body and excessive defensive reaction." It may in time, we hope, cause desyphilisation of the race. If these parasyphilitic nerve affections were not the result of nerve cell degeneration we might have looked for some improvement from appropriate treatment of them; but how can we expect degenerated nerve cells to recover? A house which has been burnt down may be rebuilt, and the fire may be prevented from spreading to surrounding property by suitable means. But if the degenerative effects of nerve-cell reaction to the syphilitic virus have once commenced and the process cannot be influenced by treatment, neither repair of the parts already damaged can occur, nor can the cell destruction be prevented from spreading. In other words, tabes and general paralysis, so far as they are due to latent syphilis, will neither be cured nor prevented by any remedy as yet known to us.

Time alone can reveal whether the use of salvarsan at the very outset of infection by the virus of syphilis will ultimately annihilate tabes and general paralysis of the insane; or whether the mere introduction for the briefest period of time of the spirochæte into the tissues and the blood will, in a certain proportion of persons in a syphilised race, light up the cell reaction which ultimately produces these diseases.

DOES RACIAL IMMUNITY TO ACTIVE SYPHILIS FAVOUR TABES AND GENERAL PARALYSIS?

If the prevalence of syphilis for many generations, and the systematic treatment of the disease by mercury, create in a race a degree of immunity to severe forms of syphilitic lesions, but at the same time a tendency to cell degeneration, there ought to be evidence forthcoming in support of these statements from Japan, China, and South America. That there is a degree of racial immunity to severe forms of syphilis in the Japanese seems indicated by the experience of Dr. Ashmead, which I have previously quoted. Is there also a great tendency in that race to cell degeneration either of the nervous system, as shown by tabes and general paralysis, or in the arterial or any other great anatomical section of the body?

Is syphilis the only, the exclusive, cause of tabes and general paralysis? Since 1881 there has been an increasing tendency so to regard it. The first recognition of the intimate association of syphilis and general paralysis was made in countries (the Scandinavian) where syphilis had for a long time been a notifiable disease. Dr. Mott is of opinion that syphilis is the commonest cause of nervous diseases in general. Sir George Savage points to certain cases in which head injury in syphilitic cases had been the exciting cause of general paralysis of the insane, and he is uncertain as to whether or not head injury without syphilis can produce it. But he is not logically entitled to draw the conclusion that it is proved that it is not syphilis "alone or always which produced general paralysis of the insane," because among certain tribes and isolated collections of men "syphilis was all but universal, but general paralysis absent." The inverse condition might have justified this conclusion—namely, if among these groups of persons general paralysis had been almost universal and syphilis absent. Sir George Savage has constantly observed in general paralysis a good memory with great mental loss. Such retention of memory is not common in parasyphilitic affections. He has also noticed certain forms of mental degeneration associated with syphilis, starting in some local symptoms, such as ptosis, aphasia, or a local palsy which passed off in some cases completely, and the cases did not end in general paralysis. On the other hand, some such local brain lesions frequently usher in general paralysis. He goes no further than to say that his belief is that syphilis is a great cause of general paralysis.

WASSERMANN'S REACTION AS A SPECIFIC TEST FOR SYPHILIS NOT YET FULLY UNDERSTOOD.

Dr. Mott tells us (1) that the spirochæte—the special organism producing syphilis—has never been found in the lesions of general paralysis; (2) that general paralysis occurs in persons in whom the antecedent signs of syphilis are usually slight and often entirely absent; (3) that with an experience of 500 necropsies in bodies diagnosed as being the subjects of general paralysis those in which gummatous or other severe syphilitic lesions existed turned out to be pseudo-general paralysis due to gross syphilitic lesions of the membranes and vessels of the brain. Assuming these to be indisputable facts, are they not strong evidence against, not in favour of, general paralysis being a disease of syphilitic origin and due to latent syphilis? On what is based the present reliance in the syphilitic causation of this disease? Is it not to-day the Wassermann reaction? And does this not assume that syphilis, and syphilis only, gives the reaction? And is this assumption warranted by facts and by what is known at the present time? Dr. Mott also tells us (4) that he has never seen a primary sore or a secondary eruption in a general paralytic person; and (5) that Krafft-Ebing has inoculated the virus of a hard chancre into nine general paralytic persons who had never shown any sign or given any history of syphilis, yet not one of them was infected. These two statements (4 and 5) will be held to be proof that these persons were syphilised already and were therefore immune to reinfection with the syphilitic virus. In support of this there is the rarity of a second attack in the same person of ordinary acquired chancre, and the failure of Dr. Ashmead to inoculate Japanese harlots with the virus from a chancre.

And here may be interposed the following question: Are those who are syphilised already the only persons who can resist the infection of syphilis? Are we justified in asserting that the only state of the body which can resist infection with syphilitic virus is one of already existing syphilisation?

If I understand Dr. Mott aright, he is of opinion that in the case of a widespread infectious disease, sooner or later the virulence of the disease dies down because there are increasing numbers of the population (1) in whom the local

infective process is so mild as to be unobserved; (2) or who have the disease in the primary and secondary stages, but in a very mild form; (3) or who possess a complete immunity. If this be so, why suppose that every general paralytic who has been exposed to infection of syphilitic virus, either by experiment or in the ordinary manner in which syphilis is acquired, but who does not take the poison, has previously had syphilis and still has it in a latent form? Why not suppose the third alternative—namely, the possession of complete immunity—as the explanation in many cases? Mr. McDonagh will reply, "There is no such thing as immunity"; either a person has not had syphilis before and will take the infection if exposed to it, or being syphilised already he does not take it afresh.

This argument is, of course, in favour of the syphilitic origin of general paralysis when applied to the statements (4) and (5) mentioned above, but is it not a *petitio principii?* Does it not beg the very question in dispute? To my mind, however, this argument, erroneous as it is, is more consistent with facts than the inference as to the existence of syphilis drawn from the positive Wassermann reaction. This reaction, it would seem, is now very generally accepted as a reliable test of the presence of syphilis. It was confirmed in 107 out of 110 cases of general paralysis. In general paralysis there is a very marked reaction of the blood and cerebro-spinal fluid in nearly 100 per cent. of cases. No case diagnosed as one of paralysis which gave a positive result with Wassermann's test was found to be other than general paralysis at necropsy, and this in spite of the fact that in paralytics "the signs of antecedent syphilis are usually slight, and often entirely absent."

Of the value of the Wassermann reaction in the diagnosis of general paralysis Dr. Mott says there cannot be the slightest doubt. But it is a long jump from the almost cent. per cent. positive Wassermann reaction in general paralysis to the conclusion that mild or latent syphilis is the cause of this reaction in cent. per cent. of cases of general paralysis. When Dr. Mott tells us of a large number of cases in his own experience of syphilitic cord and brain disease which 15 years ago he believed to have been cured, but which subsequently died from syphilitic complications after having been paralysed, we are on safe ground. But what proof is there in many other cases, beyond the Wassermann reaction, that the patients have had syphilis in any form or degree whatsoever? Mr. D'Arcy Power points out that the reaction is not given by every patient even when there are obvious signs of syphilis, and adds that it is positive in 95 per cent. of cases of secondary, in 75 per cent. of tertiary syphilis, and only 50 per cent. in latent syphilis; yet, as stated above, the reaction is positive in almost 100 per cent. of general paralysis. How is it then there is this difference?—that in the latent cases in which general paralysis has developed the reaction is positive twice as often as in latent syphilitic cases in general?

Dr. Mott says an important distinction of parasyphilis from syphilis of the nervous system is that in the latter a positive reaction of the cerebro-spinal fluid is obtained in less than 20 per cent., whereas general paralysis gives the reaction in 97 per cent., and tabes in 60 per cent. Mr. McDonagh tells us that in his experience not more than 70 per cent. of mothers of syphilitic children give a positive Wassermann reaction; that if a provocative injection of salvarsan is given to such women a positive reaction afterwards is the rule; he considers that every woman who bears a syphilitic child is the subject of latent syphilis, and tells us that such women not infrequently develop their first syphilitic symptoms as tertiary manifestations at or about the menopause, but that during the child-bearing period the Wassermann reaction may be negative even if the mother has just begotten an undoubted syphilitic infant which gives a positive reaction. Here, then, we have an accepted test for syphilis giving the most intense positive reaction and the most constant positive reaction in what are called parasyphilitic cases; whereas the reaction is not given in the first days following infection with syphilitic virus, nor in 5 per cent. of secondary syphilis, nor in 25 per cent. of tertiary, nor in 50 per cent. of latent syphilis; it occurs in 70 per cent. of mothers, all of whom are said to be syphilitic and liable to develop tertiary symptoms later in life, or it may be absent in the mother and present in her newborn infant, or *vice versâ*, or it may be absent from both the mother and her new-born syphilitic infant; and, finally, in contrast with the intensity and frequency of the reaction given by general paralytics, the positive reaction is far less intense and many times less frequent in actual and unmistakeable syphilis of the nervous system.

The parasyphilitic diseases are believed to be more prevalent now than formerly because of the widespread racial immunity to, and latency of syphilis. Thus, the position of the Wassermann test for syphilis is this—it gives the most intense reaction *in latent syphilis associated with general paralysis;* when the primary infection and secondary symptoms have been so mild as to have escaped notice; and when the conditions which cause attenuation of the virus and produce racial immunity—viz., (*a*) the continuance of mercury treatment over a period of years, (*b*) the control and suppression of suppurative processes by means of antisepsis and asepsis, and (*c*) teetotalism—have been in force, than when syphilis is present in an active form. In short, and in a sentence, the milder the syphilis—even to the degree of its having escaped the notice of the patient so that he may be quite unaware that he had ever had the disease—the greater is the tendency to tabes and general paralysis, and the stronger and more constant is the Wassermann reaction. An unwelcome inference from all this is that mercurial treatment carried far enough to cure or prevent the symptoms of secondary syphilis may set up a strong predisposition to cell atrophy and to the so-called parasyphilitic diseases at a later period.

Still pursuing the subject of the Wassermann reaction, we find that certain foreign investigators, contrary to the experience of Mr. McDonagh quoted above, state that all mothers of congenital syphilitic children give a positive reaction, and continue to do so for four years after giving birth to such child or children, and consequently, it is concluded, that in spite of *apparent* health, the mothers of congenital syphilitic children are much more frequently syphilitic than has been supposed. Here, again, reliance is placed on the Wassermann reaction as a proof that the person whose blood or cerebro-spinal fluid yields the reaction is syphilitic. Yet some of these women who gave such a marked reaction had no sign of syphilis, "had never suffered in any way, never had a day's illness."

I have referred to the uncertainty of the reaction already; a few other instances might be given. Congenital syphilitic children of mothers who have given a strong reaction have not themselves reacted; in other instances the child has given a negative reaction just after birth, but a positive reaction later when symptoms of syphilis appeared upon it. A case of ophthalmoplegia externa and interna gave a negative reaction, but cleared up under specific treatment. A patient with syphilitic arteritis gave a negative reaction until after six weeks of treatment with mercury and potassium iodide; then he gave a well-marked positive reaction. This is the "reaction provocative" of Ehrlich. Mr. McDonagh refers to "cases" which with a primary sore gave a negative Wassermann reaction, but which gave a positive reaction after an injection of salvarsan; he recommends that in the intervals between treatment when the body fluids give a negative reaction a further injection of salvarsan should be given, and the blood tested again and found again to give a negative reaction before the patient is said to be cured; and he further adds that patients who have had syphilis and been so far treated with mercury "as to have been driven into the later stage with a negative Wassermann reaction" give a strong positive reaction after one or two provocative injections of salvarsan. So constant is this that he says salvarsan can be used as a test of a cure, and that it shows also that mercury never cured a case of syphilis.

With such uncertain, variable, and paradoxical results as I have quoted, are we really in a position at present to say what the precise meaning and value of the Wassermann reaction is? I know nothing of the process of the test beyond having had it explained to me in a clear and skilful manner verbally, and by outline figures; and from having been shown in the laboratory the difference between the negative and positive reaction. It all seemed to me very complicated and very marvellous, and I wondered how it had ever entered into the thoughts of man to apply rabbit's serum and guinea-pig's serum to sheep's corpuscles, then to add an extract of the liver of a congenital syphilitic infant (or of a liver which is not from a syphilitic subject and which I am assured, notwithstanding Dr. Candler's precautions, does equally well),

and mix up with them all some of the serum of a patient whose blood is to be tested, and then to draw a momentous conclusion based on whether the red blood corpuscles of the patient sink to the bottom of a test-tube or break up and yield their colouring matter to the whole volume of the test-tube's contents. It seemed to me—whose line of life is not bacteriological research—as I have said, all very intricate and wonderful, though I am told that in reality it is not so, but on the contrary has all come about by steady, regular, and well-understood steps, thoroughly familiar to laboratory experts. But of this I feel sure, that only very competent and well-practised workers are fit to be entrusted with these investigations.

And what do we learn from them? Why this: That the experts have arrived at no unanimous opinion as to the precise value and significance of the Wassermann reaction. The majority, perhaps, of those who have recourse to it think, notwithstanding the discrepancies I have detailed, the positive reaction is a more reliable test than the negative; others that the negative, but not the positive, is the more reliable guide, because as yet we do not know the limits within which "group" reaction occurs with Wassermann's test; others, again, that the negative reaction is not a proof of the cure of syphilis until it has been obtained after, as well as before, another injection of salvarsan or the further inunction of mercury. That the positive reaction is not always given even when syphilis exists in an active form is proved. Nor can we say that only syphilis will yield a positive reaction. The blood of scarlet fever patients has done so, and we are not sure there may not be other conditions also in which the positive reaction occurs.

I learn from conversing with bacteriologists that the Wassermann test is an application of the "complement-fixation" reaction, for the diagnosis of syphilis; that "complement-fixation" reactions are of two kinds: (1) "group" reactions; and (2) "specific" reactions. Moreover, I am told that the Wassermann test represents what is called a "group," and not an absolutely "specific" complement-fixation reaction; that the antibodies in the serum of patients with scarlet fever are capable of reacting with the specific antigen used by Wassermann in his test; that hitherto it has not been possible to define the limits within which Wassermann's test represents absolutel "specific" reaction; and that, apart from knowledge of the clinical history, it is impossible to judge whether a positive "Wassermann" obtained with a particular serum represents a "specific" or merely a "group" reaction. But note! Only the "specific" reactions are absolutely decisive for prognostic purposes.

What is the Immediate Cause of the Wassermann Reaction?

What is the immediate cause of the reaction? The theory held is, I believe, that the reaction is due to lipoid bodies, the result of the action of toxins, or the spirochæta itself, on the body. The spirochæta certainly need not be present, because the reaction has repeatedly been obtained long after this organism has vanished from the patient's body. Nor is it clear that the toxins generated by the spirochæta are necessary, seeing that the most intense and constant reaction is furnished by the fluids of persons who have had syphilis in the mildest form only, and as much as 30 years before. It would appear to be some state as yet undiscovered or unexplained of the solids or the fluids of the body which is required for the Wassermann positive reaction. And though this state of the solids or fluids or both may be more frequently brought about by the virus of syphilis than by anything else, it would seem that there are other causes also—factors, perhaps, altogether independent of syphilis—which play an important rôle

Remarks on the Treatment of Syphilis.

But however perplexed we may feel in regard to the Wassermann reaction, no doubt seems possible about the remarkable effect of salvarsan upon the spirochætæ and their toxins, nor as to its power of quickly and completely causing the disappearance of the symptoms of syphilis in each of its stages. A careful perusal of contributions to this debate reveals a unanimous agreement as to the efficacy of salvarsan, but differences of opinion (*a*) as to the best system of administration of the drug; (*b*) as to whether or not it permanently cures syphilis; (*c*) as to whether it should be given with mercury or alone; (*d*) if with mercury, as to when the mercury should be commenced; and (*e*) in what form mercury is best employed. Salvarsan has certain great disadvantages. Every dose has to be prepared *ad hoc*, and requires great care in its preparation; it needs care and precision and some manipulative skill to inject it properly; it is not free of even serious risks, and it is not to be wondered at that several fatal results have attended its use, seeing that whilst it is powerful enough to create immunity reaction products which quickly attack and kill the spirochæta, it must, to be safe, do this without harming the body itself. Thus it is not a remedy to be employed by every busy practitioner, nor to be used upon patients who cannot or who are unwilling to submit themselves to the due and proper precautions which should be taken to make the treatment safe.

The treatment with mercury without salvarsan will not therefore, in all probability, be entirely supplanted. Nor from the point of view of curing the primary and secondary symptoms of syphilis and of preventing the recurrence of these symptoms does it seem to me to be at all necessary it should be supplanted. That the full, well-regulated use of mercury does accomplish such complete cure is, I consider, amply proved. I have lived long enough to watch the lives and health of many persons whom in my, and their, early days I have had to treat as patients, and to see them now the healthy parents of healthy children. I have had experience of two male patients who having been treated with mercury and been cured have contracted a second hard chancre followed by secondary symptoms, and who were a second time cured with mercury. I can recall cases of men who have had syphilis who have married before they have been fully or sufficiently treated with mercury, and their wives after one or two miscarriages have been treated during each subsequent period with mercury and have borne in one case three and in another case five healthy children who have grown to womanhood or man's estate. In neither of these cases did the mothers show at any time any signs of syphilis nor did her health suffer in any way.

I find it difficult to avoid the following conclusions—viz., that in these cases the seminal fluid of the father conveyed the disease to the fœtus of the first pregnancy, but that, in subsequent pregnancies, mercury administered to the mother had the effect of preventing harm occurring to the subsequent children, and that the mothers themselves, as they remained free of any evidence of syphilis throughout their lives, were not themselves the subjects of syphilis. And I hold this opinion notwithstanding my knowledge of another class of case—namely, where the woman who, never having exhibited any symptoms of syphilis, and having had a child or children by a syphilitic husband, has borne a child with marked signs of congenital syphilis to her second husband who was himself quite free of any syphilitic taint.

As time goes on one fact may possibly be brought to light which will make it advisable that every case of syphilis should be treated with salvarsan. If the theory that tabes and general paralysis are caused by degeneration of nerve cells due to latent syphilis be true; if this latent syphilis is brought about owing to the spirochætæ and their toxins having been incompletely or only very tardily destroyed by mercurial treatment; and thirdly, if salvarsan administered at any period between the primary chancre and the roseolar eruption which ushers in the second stage of syphilis will prevent the establishment of syphilis in the system in a latent form, then it will become the duty of the profession to see to it that salvarsan is used in every case in the early stage of syphilitic infection. Then, if these hypotheses are proved to be true, and salvarsan is given in good time, there may be expected to follow in course of years complete elimination of tabes and general paralysis from the category of diseases.

Need of Instructing Medical Students and the General Public

Attention has been directed by some of those who have taken part in this discussion (1) to the need of giving more attention to the teaching, and of making the teaching in venereal diseases more systematic, in the medical schools of this country; and (2) to the need of a system of registration of syphilis in the United Kingdom.

No doubt the recent discoveries and the recent advances in our knowledge of the diagnosis and treatment of syphilis must lead to further and special courses of instruction with

regard to them. But I must dissent from some of the statements which have been made during this discussion to the effect that no regular teaching whatever has been given hitherto to medical students in England in venereal diseases. Nor can I accept the suggestion that because a medical student contracts a chancre on his finger whilst attending a midwifery case, it is because his medical education with regard to syphilis had been neglected. I know of a very distinguished obstetric physician and gynæcological teacher who met with the same misadventure. Both alike, I have no doubt, were guilty of some slight carelessness or apparently trivial inadvertence. I do not doubt that the student had received much instruction from several of his teachers about the hydra-headed phases of syphilis, nor that the obstetrician I refer to was in the habit of cautioning his students and nurses against the dangers to themselves which syphilis in the mother presents, and the dangers to the infants which maternal gonorrhœa creates. Still, I feel sure that the question of improved or more specialised teaching in syphilis, as well as questions relating to the statistics, notification, registration, and segregation of persons affected with syphilis will, in the interests of public health, soon come under the careful consideration of a committee of the Royal Society of Medicine, which was recently appointed after representatives of the society had held a conference with certain representatives of the Eugenics Education Society.

Some weeks ago an inquiry was set on foot by our society with the aid, and through the medium, of the Secretary of State for Foreign Affairs, as to what is being done in other countries in regard to the registration and segregation of syphilitics, and already several reports have been received from abroad. These reports, together with the information and recommendations contained in the practical and suggestive papers of Major H. C. French, R.A.M.C., Major T. W. Gibbard, R.A.M.C., Dr. Douglas White, Mr. F. E. Fremantle, and others, which this important debate has brought to notice, will, I believe, be of considerable assistance to our committee, and ultimately of much importance and benefit to the public.

PRESENTATION TO A MEDICAL PRACTITIONER.—On August 3rd Mr. Reginald Statham, M.R.C.S. Eng., L.S.A., of The Hall, Cheddar, Somerset, was presented with an engraved silver casket containing £78 10*s.* and a book bound in white calf, with the signatures of 869 subscribers, as a mark of respect and esteem on the occasion of the celebration of his silver wedding.

LITERARY INTELLIGENCE.—The following new books are announced for early publication by Messrs. J. and A. Churchill:—"The Malformations and Congenital Diseases of the Fœtus," by Professor Dr. R. Birnbaum, chief physician to the University Clinic for Women, at Göttingen. Translated and annotated by Dr. G. Blacker, obstetric physician, University College Hospital. With eight plates and 58 illustrations. "General and Industrial Inorganic Chemistry," by Dr. Ettore Molinari, Professor of Merceology at the Commercial University Luigi Bocconi at Milan. Translated from the Italian by Dr. Ernest Feilmann. With 280 woodcuts, one cromolithographic plate, and two phototype plates. This, the first volume of Professor Molinari's treatise, is just ready. The second volume dealing with Organic Chemistry and translated by Mr. T. H. Pope, School of Brewing, University of Birmingham, will be published in a few months' time. "Digestion and Metabolism, the Physiological and Pathological Chemistry of Nutrition," by Alonzo E. Taylor, Rush Professor of Physiological Chemistry, University of Pennsylvania, Philadelphia. "The Evolution of the Vertebrates and their Kin," by William Ratten, Professor of Zoology, Dartmouth College, Hanover, N.H. With 309 illustrations. "Meat Hygiene, with Special Consideration of Ante-mortem and Post-mortem Inspection of Food-producing Animals," by Richard Edelmann, Professor at the Royal Veterinary High School in Dresden. Translated by John R. Mohler, chief of pathological division, United States Bureau of Animal Industry; and Adolph Eichhorn, senior bacteriologist, pathological division, United States Bureau of Animal Industry. With 152 illustrations and 5 coloured plates.

VACCINATION FOR TYPHOID FEVER BY LIVING SENSIBILISED BACILLI TYPHOSI.

BY W. BROUGHTON-ALCOCK, B.A., M.B. CANTAB., M.R.C.S. ENG., L.R.C.P. LOND.,
LIEUTENANT, ROYAL ARMY MEDICAL CORPS (TERRITORIAL).
(From the Laboratory of the Pasteur Institute, Paris.)

THE recent experiments of MM. Metchnikoff and Besredka proved that the chimpanzee could be protected against an infection following large doses of bacilli typhosi given by the mouth, while the control animals contracted a disease which by its clinical signs and pathological appearances appeared to be identical with that which we term typhoid fever in man. The method employed was to inject in two doses, at ten days' interval, an emulsion of sensibilised living bacilli typhosi, as recommended by Besredka.

The good results attained justified the application of this method of vaccination to man, and hopes were entertained that more certain immunity would follow the injection of the living sensibilised micro-organisms than had been attained in man and chimpanzee by the injection of the dead micro-organisms. Metchnikoff and Besredka most kindly entrusted me with this work, and throughout the experiments and studies made from a clinical-biological standpoint their invaluable direction and counsel have been most generously given, and I am most deeply indebted to them. Special attention has been paid to the clinical observations.

A few words on the primary essays at sensibilising the bacilli typhosi may be interesting. For many years the value of an antityphoid serum has been known. It gives an immunity within 24 hours against infection by the micro-organism of the same kind, but this immunity is of short duration, only about 14 days. The bacilli typhosi killed by heat, at 53° or 56° C., or by ether and in association with paratyphoids A and B, followed by their autolysins have also been injected. The immunity which follows appears after about one week from the first injection and cannot be said to be absolute, notwithstanding the most gratifying results obtained in the various armies.

Several *savants* have conceived the idea of associating the two properties in preparing a mixture of the bacilli typhosi killed and the serum of an immunised animal. But the results have been disappointing, especially in the short duration of the immunity conferred.[1]

Besredka was simultaneously working upon his idea that the two properties could be associated, while all the substances, foreign and toxic, should be eliminated. Also, he thought that the micro-organisms living would give rise to an immunity response by the body more like to that resulting from a true infection, and so more absolute. The ready phagocytosis and bacteriolysis of the sensibilised bacilli remove all risks of making carriers, as the later experiments on both man and chimpanzee have shown. In short, the method devised by Dr. Besredka closely approaches the ideal method of vaccination for small-pox, and in its application we hoped for equally gratifying results.

Culture media.—It was of interest to follow at the same time any differences of local and general reaction that may follow the injection of bacilli grown on medium with and without peptone. The number of persons to be injected being small, I restricted myself to ordinary test-tubes of gelose sloped. Later I have, however, seen that in preparing a large quantity of vaccine one may equally well employ the Roux bottles, estimating the growth as 16 times that on the former. Suffice it to say now that on gelose medium, without peptone, and used within eight days of its preparation, during which time it is preserved in rubber-capped tubes, there is always a growth of half as many again of bacilli typhosi as in a culture of the same time—24 hours—on the gelose medium prepared with peptone. I may mention, however, that this character cannot have a general application.

Virulence.—There has been much discussion on this question. Colonel Sir William Leishman, R.A.M.C., and later Major Russel, United States Army, and Vincent have recommended a strain of feeble virulence. Wassermann has proposed to use a strain that calls forth the greatest response from the body as judged by the examination of the blood for amboceptors, bacteriolysins, &c. Besredka has found most

[1] Bulletin de l'Institut Pasteur, tome viii., No. 6, March 30th, 1910.

contradictory results in trying the virulence of several strains upon animals. As an instance he has observed that a dose of a strain taken from a carrier killed the guinea-pig at one-sixth the quantity found necessary of a strain taken from a man after death from typhoid fever. The injection of the latter gave rise to an attack of typhoid fever in a chimpanzee, while an injection of the former had but a slight transitory effect on another chimpanzee infected. The strain which I have employed was taken two years ago from a patient who died of typhoid fever, and is identical with that which gave such excellent results in the experiments of Metchnikoff and Besredka on chimpanzees.

To a culture of 24 hours on gelose medium, without peptone, is added 1 c.c. of sterile 0·8 per cent. saline. With the pipette used the surface is gently rubbed and an emulsion made; this is filtered through fine silk into a sterile centrifuge tube or glass, and ½ c.c. of antityphoid horse serum is added. The mixture is left for 24 hours at laboratory temperature, which should not exceed 20° C. Sufficient sterile saline is then added, and the mixture is centrifuged during 5–6 minutes. After removing the supernatant fluid more saline is added and the mixture again centrifuged. 10 c.c. of fresh saline is then added to the washed bacilli, and 1 c.c. of the emulsion is placed in 10 tubes, each containing 9 c.c. of sterile saline. One-tenth of 1 c.c. of the above test tube emulsion contains about 500,000,000 bacilli, and this is the number we recommend for the minimum adult dose. The method of preparation of the antityphic serum has been fully described by M. Besredka,[2] to which I may refer the reader.

The sensibilised bacilli stain well. They are regular in outline, but broader and apparently swollen.

Conservation.—It was of interest to see if the bacilli remained alive for some time and at varying temperatures, from the point of view of exportation of the vaccine. I have kept some of the prepared vaccine exposed to indirect light for four months, some in the ice house during two months, and some in the incubator during six weeks; also a centrifuged mass from two Roux bottles alternately in the cupboard and exposed to indirect light during 4½ months. All contain the living bacilli in great quantity. It is important to note that the employment of tubes or glasses that have been sterilised by acid washing often leads to the death of the bacilli.

Numeration.—I have employed the method introduced by Wright, counting both from the fresh and from the coloured preparations. By the former method one must avoid allowing the preparation to become warm, as the stroma of the red corpuscles often takes on the form of spirilla, &c., which may confuse the counting, as was pointed out by Nuttall and Graham-Smith. The method of counting by the Thoma-Zeiss counting chamber, so serviceable for the cocci group, was not sufficiently accurate for the bacilli typhosi.

I prefer while working in a laboratory, where one can always find another worker employing titrated substances for the deviation of complement test, to test the emulsions of new cultures by the amount of complement they fix. An emulsion of bacilli typhosi (killed by heat) at 500,000,000 per c.c. will, when diluted 1/40 and employed at the dose of 0·1 c.c., just fix 0·1 c.c. of guinea-pig complement titrated to just dissolve 1 c.c. of a 5 per cent. solution of sheep corpuscles and titrated specific rabbit serum. Varied quantities of new emulsions can be made and that corresponding to the standard be detected. It has also the practical value that the growth on a test tube of sloped gelose without peptone for 24 hours is near 50,000,000,000. On the Roux bottles it is about 16 times greater, and so generally constant have I found the growths on the carefully prepared fresh medium in test tubes that a little more or less than 0·1 c.c. of 1/400 solution has just fixed the 0·1 of complement, so that in practice one may use 1 c.c. of the dilution of 1/100 as recommended. I may mention that on sloped gelose with peptone in a test tube a culture of 24 hours contains about 35,000,000,000.

Quantity to inject.—From the results to be seen under the heading "Clinical Experiences" we have judged the best dose for an average-sized woman to be—

First injection	... ...	500,000,000 in 1 c.c. of saline.
Second ,,	... ...	1,000,000,000 ,, 2 ,, ,,

For a man of good physique the dose should be—

First injection	... ...	750,000,000 in 1 c.c. of saline.
Second ,,	... ...	1,500,000,000 ,, 2 ,, ,,

[2] Annales de l'Institut Pasteur, 1906.

The injections may be equally well given deep into the subcutaneous tissues of the upper arm or abdomen; the latter route is to be preferred in cases where the patient is very thin. The quantities injected give sufficient surface for absorption, and this is aided by gentle massage which encourages an increased flow of blood to the part. I never injected into the vein because the rapid bacteriolysis that would occur on meeting complement might have too rapidly set free the endotoxin with serious results. Moreover, one avoids the condition of rigor which often follows if such a method is employed. Again, Dr. H. de R. Morgan has shown that injections of living unsensibilised bacilli typhosi in large doses directly into the veins of rabbits may occasionally lead to their detection in the walls of the gall-bladder or in the intestines. Though the fate of the sensibilised and unsensibilised micro-organism when injected is markedly different, I did not wish to take even the risk of possibility that the rapid course of the blood, owing to the concentration of bacilli, might take and allow them to pass there before there was time for their phagocytosis by the blood leucocytes or endothelial cells, or for their complete bacteriolysis.

Clinical Experiences.

These have been brought into three series according to the doses given.

Series I.—This series comprised both sexes of varied ages and weights. The first dose of 1 c.c. of 1/100 dilution of a culture of bacilli typhosi of 24 hours on gelose with peptone contained about 310,000,000. The second dose of 2 c.c. of the same dilution was given eight, nine, or ten days later. The site of the inoculation varied, and was in some cases the arm, others the leg, others the abdomen—always deep in the subcutaneous tissue. After the first injection there was in no case a rise of temperature from the normal or any subjective symptoms. The local reaction was very slight, comprising an erythema, slight induration, and sensitiveness on palpation around the region of the inoculation. These signs disappeared after lasting from the twenty-fourth to the forty-eighth hour. In no case was the patient inconvenienced, nor did any cease from his or her ordinary occupations. No alteration of diet or increased hours of repose were enjoined. The date of the second injection seemed immaterial, and there followed no general symptomatic reaction, while the local reaction was even less than that after the first injection.

Series II.—All the patients were of the female sex, of varied ages—20–57 years—and weights. The first dose was 1½ c.c. of a dilution similar to that used in Series I., or 1 c.c. of a 1/100 dilution of a 24 hours culture on gelose medium prepared without peptone. These injections were followed eight, nine, or ten days later by double that quantity of the respective vaccines. The first dose of the latter vaccine contained about 500,000,000 bacilli typhosi. With one exception of a young woman of very small stature, whose temperature rose to 38° C. during the first 48 hours after the first injection, but which was unaccompanied by any subjective or objective symptom, there was no rise of temperature, no headache, lassitude, or other subjective symptom, and each continued in their ordinary occupations without restriction. The local reaction was more marked than that following the smaller injections of Series I.—an erythema and induration with tenderness on palpation extended to an area of about 4 square centimetres and lasted five to six days. The vaccine prepared from the culture on gelose without peptone showed less local reaction, and I observed that the women of smaller stature had more marked signs. The second injection gave rise to no local or general reaction that could be noticed.

Two interesting cases appear in this series. One was that of a woman, aged 47, who fainted and fell from the chair during the injection. I mention this detail as it may have happened that the site was then infected. Five days later fluctuation could be felt at the point of inoculation. Sterilising the skin I drew out in a pipette a little of the pus. From this was grown a culture of bacilli typhosi and a few colonies of the staphylococcus epidermidis albus. A film of the pus showed a mass of uninjured polynuclear leucocytes, with hardly a trace of débris and very few micro-organisms. Within five days the pus entirely disappeared without any surgical intervention.

The second was that of a woman aged 43. She had been confined to bed during 15 days because of a feeling of weakness and an associated temperature 38–38·6° C., which

remained constant night and day. No clinical signs nor the usual laboratory methods could detect the presence of the bacilli typhosi, but on the advice of her physician she was inoculated. The inoculation produced a fall in the temperature, which, however, did not persist. It in no way increased the general symptoms. The local reaction was slightly more marked in comparison with that of the other patients. Amongst the ten were two patients who had had typhoid fever 5–6 years previously.

Series III.—This series comprised 20 cases of both sexes, varied ages, and weights. The first injection was of 2 c.c. of emulsions similar to those used in the last series, the number of bacilli typhosi injected being about 600,000,000 or 1,000,000,000 at the first inoculations. The second injection was of twice that dose and quantity of micro-organisms. They were given deep into the subcutaneous tissues of the arm or abdomen. The latter place showed less local reaction. Most patients showed after the first injection a rise of temperature to 37·5° C. In two cases it rose to 38°. Three patients complained of headache and a feeling of lassitude during the first 24 hours. The local reaction was marked in just half the number of cases. The erythema and induration extended to a diameter of 6–8 centimetres. Though in no case were the daily occupations altered, yet during the first 12–36 hours free use of the arm was hampered or pressure on the abdomen painful. The patients of small stature gave the more marked reactions. Sex seemed to have no great influence. The reaction in a woman who had previously suffered from typhoid fever was in no way different from that in the other cases. The second injection was generally followed by a slight rise of temperature, 37·3° C. to 37·5° C., but was accompanied by no general symptoms or local reaction. I could not see any difference in this series in the reactions from the vaccines prepared from the growths on the two media.

A case of exceptional interest is that of a man, aged 38 years, of very strong physique, who for two weeks had been too ill for work, his physician diagnosing that he was suffering from influenza. His temperature at night rose to 38° C., 39° C., or 40° C. Complete blood and stool examinations for typhoid were negative. The evening after his first injection his temperature was 38° C., next morning 37·5° C., and later normal. He returned to work the third day after the injection. It is interesting that Pescarolo and Quadrone have reported favourable results in a patient diagnosed as suffering from typhoid fever after inoculations of living bacilli typhosi.[3]

A comparative clinical study was made on four cases inoculated with the vaccine kindly supplied to the Pasteur Institute for the purpose by Colonel Leishman. I chose four persons of medium stature and good physique. The description of the reactions given by him [4] leaves nothing to be added. The relative innocuity and absence of marked reactions after the vaccination by sensibilised living bacilli typhosi give much value from a clinical standpoint to the employment of this method, for with similar quantities of bacilli typhosi there is hardly any local and no general reaction noticeable. The comparative study made on certain properties of the sera of all patients inoculated either by the method of Leishman or by that of Besredka is of particular interest, as an account will show; but as it is not my purpose to discuss immunity values as judged therefrom, I shall confine myself later to a few remarks from those who have worked upon vaccination for typhoid fever and of our own interpretation. Practical values must in the present state of our knowledge take precedence of theoretical conjecture.

Agglutination.—No serum taken prior to the injections showed agglutinating properties for a young culture of bacilli typhosi. The sera of patients inoculated by the vaccine of Leishman strongly agglutinated on the sixth to eighth day after the first injection. Those of the patients injected with the living sensibilised bacilli in only a few instances showed this property some days after the second injection. Neisser and Lubowski [5] obtained similar results on injecting rabbits with killed agglutinated bacilli. Ehrlich explains these results by stating that generally the bacterial receptor which fixes on the cell and calls forth agglutinin bodies in the body is occupied, and only in rare cases does the animal possess the power to dissolve the combination of agglutinin and bacterial receptor and thus set the latter free.

Fixation of complement.—No serum prior to inoculation was able with a titrated antigen of dead bacilli to fix guinea-pig's complement. The sera of the four patients inoculated with the vaccine of Leishman fixed the complement from the eighth day after the first injection. I never obtained a deviation of complement from any serum taken from patients after the first and second injections of the sensibilised living bacilli typhosi.

Bactericidal power.—I regret to state that in my efforts to make a comparative study of this property of the sera by the Neisser method I failed, for I cannot consider my results sufficiently consistent and definite for publication. The disappearance of the number of colonies from the Petri dishes was not regular. The destruction of the bacilli typhosi by the addition of specific amboceptors and complement contained in serum, or of inactivated specific serum plus fresh complement, takes more than three hours, and this seemed to give ample time for the multiplication of any resistant bacilli. Again, in some of the sera the agglutinating property was macroscopically present in a dilution of 1/400 in 5–7 minutes. Such adverse factors will help, I think, to explain my failure. Unfortunately, I had not an opportunity of repeating the examinations of the sera by the method advised by Wright.

Phagocytosis and opsonins.—In these studies I regret I had neither the time nor the opportunity of making daily examinations of the sera. I had to confine myself to specimens taken just before the second injection for Series I. and to specimens taken one week later for Series II. I employed the method as advised by Klein. After separating the sera they were heated during 30 minutes at 56° C. Before employing our strain of bacilli I took several specimens of sera from normal persons, and used with one set of dilutions the leucocytes of an assistant and with another my own. The emulsion was made with a young culture of 20 hours, not too dilute. The phagocytosis was satisfactorily uniform, and the average of 0·5 per polynuclear leucocyte appeared in the dilutions of 1/24.

Series I.: Sera after inoculation.—(*a*) By the method of Leishman. With the sera that agglutinate strongly the bacilli typhosi were, when the dilutions were low, clumped in masses at all places on the slide and comparatively few were in the phagocytes. However, at the dilution of 1/12 phagocytosis was at its highest, averaging 25 bacilli per phagocyte and gradually diminishing as the dilution to 2 in 1/192. Unfortunately, I did not go beyond this dilution.

(*b*) By the method of Besredka. There is no agglutination present. The phagocytosis is extremely active, and in the low dilutions the bacilli in the phagocytes are too numerous for counting. In the dilution of 1/192 the average number of bacilli phagocytosed was 6.

Series II.—After the second injection the phagocytosis is more marked, and the comparative figures equally apply. Recent experiments tend to show that this increased phagocytosis that follows the injection of living sensibilised bacilli is due to the production of an anti-endotoxin in the serum, which acts against the bacilli.

Leucocytosis.—Because of the important part that phagocytes play in dealing with bacilli, I endeavoured to follow the changes that may occur in the number and varieties of white blood corpuscles following the injection of living sensibilised bacilli typhosi. It was interesting, too, because of the work of Wassermann and Pfeiffer and Marx, later confirmed by Deutsch. They found that the hæmatopoietic system represents the site of production of bacilli typhosi antibodies. The changes following the injection of dead organisms have often been studied and published, and it would be of no value to repeat them.

My results showed that there was no constancy in the changes seen, either in number or variety, in the many bloods examined. The only constant factor was the inverse proportion of the polynuclear to the mononuclear leucocytes. In fact, I have seen similar variations in apparently normal bloods taken on several successive days before the patients had breakfasted. Andrewes and Horder [6] point out from their studies on blood and bone-marrow the necessity of an

[3] Zentralblatt für innere Medizin, Oct. 3rd, 1908.
[4] Harben Lectures, August–September, 1910.
[5] Centralblatt für Bakt., P., und I. K., vol. xxx., 1901, 13.
[6] Report of Local Government Board, 1907–08.

almost constant blood examination. This was, of course, impracticable.

As these five properties of the sera of vaccinated patients have entered so much into the question of immunity, while leaving aside such properties as stimulins, aggressins, precipitins, anti-endotoxins, &c., I feel it may be interesting to add a few remarks, in so far as concerns my results from the work on this subject. But I repeat, far be it from me to enter upon that great problem of immunity as a whole. I am of the opinion that it is better to follow the histories of the people vaccinated and to compare them with those of the people non-vaccinated and living under identical conditions. Most of the people vaccinated are exposed to the possibility of contracting typhoid fever, and this point has been made clearly manifest in that in the infirmary of one physician there were six cases preceding the vaccination of some of his patients and there have been three cases during the three months since amongst the patients non-vaccinated.

I think that my work has a great practical value in that my results of vaccination by the sensibilised living bacilli typhosi—Besredka's method—have proved that that formidable barrier of a local and general reaction, so intimidating to many people, has been cleared away. In striking contrast are the figures of Fleming on the reaction following the vaccination method of Pfeiffer and Kolle: 97 per cent. of cases developed fever (average temperature 38·4° C.), 63 per cent. shivering, 61 per cent. headache, 19·4 per cent. nausea and vomiting, and 19·4 per cent. herpes. Loss of appetite occurred in all. Since 1905 vaccination for typhoid fever has ceased in Germany. Major Russell[7] found after vaccination in the United States army his results comparable to those published by Leishman in the Harben lectures.

Professor Vincent, after making a comparative test with Wright-Leishman vaccine, and his double method of vaccination by bacilli and autolysins,[8] declares that the reactions following the injections with his vaccines are analogous to those determined by the Jennerian vaccination, and that many refused vaccination because of the associated pain and suffering involved. In fact, many soldiers before departing for Morocco have come to the institute and asked to be vaccinated.

Are we to judge from the properties found in the blood serum of persons vaccinated the degree of immunity attained? I have never succeeded in detecting specific amboceptors, and rarely, and only then weak, agglutinins following the injection of sensibilised bacilli typhosi. The literature on these points is interesting. Koch concluded that the production of specific amboceptors detected in the serum bore no relation to the degree of immunity of the patient. He had seen that the serum from many cases where the disease had progressed unfavourably contained a rich suply of amboceptors, while other sera from patients who had recovered had never made manifest their presence. Leishman,[9] after stating that it would be a distinct advantage to do away with the discomfort of the local and general reaction, and that the vaccination by living bacilli should theoretically be ideal, concludes these most interesting and valuable lectures by emphasising the point that an increase in phagocytic activity is the most important phenomenon in typhoid immunisation. Not only is such a rise a constant occurrence, but it has many times been found where there was no evidence of increased bactericidal power, and even when specific agglutinins were at fault. Vast experience has shown to him that immunity can last long after the disappearance of known specific serum properties.

Russell[10] deems it illogical to conclude that immunity bears a relation to the detected presence of specific antibodies, since agglutinins, opsonins, and bacteriolysins disappear from the sera after an attack of typhoid fever in the course of a few months as a general rule; and yet the immunity from the attack lasts for many years, if not for life. He considers immunity a question of the education of body cells, being trained by vaccines to suppress the micro-organism during the incubation period. With him I am partly in accord, and especially in his view as to the part played by the polynuclear leucocytes and endothelial cells. I wish to add that most probably an additional and important factor is produced in the blood by Besredka's method of vaccination in the form of an anti-endotoxin, which acts directly and takes part in the prevention of the propagation of the bacilli in the blood.

The work of A. Garbat and F. Mayer seems to support this latter probability, and we are much in sympathy with their method of judging the immunity value of sera.[11] After inoculating two series of animals—one with micro-organisms killed, but non-sensibilised, the other with similar micro-organisms sensibilised and then killed—they found that the sera from the latter series alone contained an anti-endotoxic property whereby its injection, even three hours later, saved the animals from a lethal dose of the same micro-organism. They found that these sera did not contain agglutinating properties or fix complement. Klien[12] concludes that the rôle of agglutinins and bactericidal substances in typhoid immunity is doubtful. He attaches more importance to the specificity and more marked phagocytosis.

Pfeiffer points out from animal experiments that a non-specific resistance plays the principal part in protecting the animal, for guinea-pigs made more resistant to typhoid bacilli were at the same time more resistant to the cholera vibrion and *vice versâ*. He did not, however, desire to apply these results to man.

Topfer and Jaffé[13] found the bactericidal power of serum examined by the Neisser method more marked during the convalescent stage after typhoid fever, and the reverse by the *in vivo* method of Pfeiffer.

Morgenroth and Sachs[14] state that one cannot conclude that an amboceptor is absent, from the impossibility to reactivate inactive sera by means of several other active sera. The numerous possibilities to account for this failure of detection, should they be present, after an injection of bacilli that have been in contact with the serum of an immunised horse cannot be discussed in this paper.

Sachs, in repeating v. Dungern's experiments,[15] did sometimes detect the presence of specific amboceptors after the injection of sensitised red blood cells.

I have observed that during an attack of gonorrhœa and after the injection of dead gonococci one often fails to detect the presence of the specific amboceptor in the patient's sera. The fact that one can detect them in certain cases seems to have no relation to the severity or progress of the disease.

The question of the existence of a negative phase following other than an enormous disproportionate dose has, I think, been settled in the negative by all workers on typhoid fever; and one need not fear to inject the vaccine, even in time of an epidemic. Haffkine's finding that when a patient is vaccinated during the incubation period of plague the attack is always less severe, is of interest in this direction.

As M. Roux was first to emphasise, there is a well-marked difference in the results obtained *in vitro* as compared with what takes place in the body. The chimpanzee is the animal most closely allied, both anatomically and physiologically, to man, and the experiments, so definite both in the year 1911 and since repeated with similar success recently, must give to this work of MM. Metchnikoff and Besredka a very high value.

I have quoted from but few of those who have given so much time to the study of the therapeutic value of vaccination for typhoid fever. In the present condition of our knowledge, I think the greatest reliance must be placed on the carefully compiled and personally supervised statistics that such workers as Leishman are supplying to the scientific world. The growing increase in the number vaccinated, and diminution of the disease in the British Army since 1906 are most directly proportional, and such results are of inestimable value. Chantemesse, Vincent, and Russell are producing interesting statistics on the same basis.

Conclusions.—1. The successful experiments on man by the method of Besredka have taken us one step forward in the application of vaccination. Cannot the sensibilised living bacilli typhosi be considered in the same light as the

[7] Johns Hopkins Hospital Bulletin, March, 1910.
[8] La Caducée, Dec. 16th, 1911.
[9] Harben Lectures, 1910.
[10] Johns Hopkins Hospital Bulletin, 1910.
[11] Zeitschrift für Experimentelle Pathologie, 1910, p. 1.
[12] Johns Hopkins Hospital Bulletin, 1907.
[13] Zeitschrift für Hygiene und Infectionskrankheiten, Leipzig, 1906.
[14] Berliner Klinische Wochenschrift, 1902, No. 27.
[15] Ehrlich's Studies in Immunity.

virus of small-pox, attenuated or modified by the immunised calf lymph, and which gives rise to a specific immunity that may be veritably called ideal?

2. The sensibilised living bacilli remain alive over four months without exceptional precautions and their preparation is simple, rapid, and practical.

3. The first dose for a woman of average size should be 500,000,000 sensibilised living bacilli typhosi in 1 c.c. of 0·8 per cent. saline. For a man of good physique the first dose should be 750,000,000 in 1 c.c. of 0·8 per cent. saline. The second doses, 7–9 days later, should be double these quantities. The dose of 500,000,000 represents 1 c.c. of a culture of 24 hours on gelose without peptone in 100 c.c. of saline. Diluted 1/40 and at the dose of 0·1 c.c. it fixes 0·1 c.c. of titrated guinea-pig's complement.

4. There is no general reaction and only an insignificant local reaction following these injections. The patient is in no way obliged to change his daily routine of living. These results are in marked contrast with my experience of the reactions following the injections of the same number of killed bacilli in the vaccine of Wright-Leishman.

5. An elevated temperature, a previous history of typhoid fever, and the time of menstruation are not contra-indications to the giving of the living sensibilised bacilli typhosi.

6. The sera of persons injected with sensibilised bacilli typhosi have not been found to deviate complement and only rarely to agglutinate an emulsion of a young culture. Their addition, however, markedly increases phagocytosis. Probably they also contain anti-endotoxin bodies.

7. The detected presence of specific amboceptors, agglutinins, bacteriolysins, cannot be said to show the degree of immunity attained. The results of experiments *in vitro* cannot be interpreted as denoting the state of the patient's resistance.

8. As it has been asserted by all authors that vaccination by living micro-organisms is the most effective, and, moreover, this has been proved by the experiments on chimpanzees made by MM. Metchnikoff and Besredka, and as my observations on man have proved the innocuousness of the living sensibilised bacilli typhosi, I presume to conclude that this method ought by preference to be applied to man.

Since the writing of this article 750 persons, including many soldiers, have been inoculated. The results are most satisfactory and encouraging.

Paris.

PRELIMINARY NOTE ON A

METHOD OF VACCINAL TREATMENT OF SURGICAL TUBERCULOSIS.

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ACTING on the supposition that while artificially prepared tuberculins may contain many of the toxic substances responsible for the pathological changes present in a tuberculous focus, the whole of these toxic substances would be most likely obtained in tuberculous foci as they occur in the naturally infected human body, we have used such material for the preparation of a vaccine. In short, instead of using artificial media for the growth of the tubercle bacillus in the preparation of vaccinal material, the products occurring where human tissues have acted as the culture medium have been employed. Further, we have made as far as possible the vaccinal treatment autogenous, using the patient's own tuberculous material, obtained at an operation or otherwise, as the source of the vaccine. In some cases this was impossible as no operation had been performed, and in such instances material from other patients was used; but bone cases were always treated with material from bone tubercle and gland cases with material from gland tubercle.

The few cases in which we have tried the treatment have done so well that we think we are justified in publishing this preliminary note.

The technique used was as follows. A portion of tuberculous tissue—preferably caseous—was taken at the operation and ground up in an agate mortar with washed silver sand, saline was then added, and the emulsion allowed to stand for an hour to allow the grosser particles of the sand and tissue to settle. The supernatant fluid was then centrifuged to get rid of the finer particles. This supernatant fluid was pipetted off and sterilised by heating to 60° C. for an hour. The fluid so obtained was tested for sterility, and finally put up in measured quantities in sterile capsules which were sealed.

Dosage.—In these our preliminary experiments we made no attempt to accurately standardise the vaccine. We began our experiments with a very small quantity of the vaccinal fluid—5 cubic millimetres—and if the patients did not react too severely the next dose, which was given a week after, was increased to 10 c.mm., and so on with increments every week of 5 c.mm., until at the end of ten weeks a dose of 50 c.mm. was given. In one case only was there a severe reaction to a 5 c.mm. initial dose. In this case the dose for the first few weeks was kept at 5 c.mm., the reaction becoming less severe with each injection, and in the end the dose was increased as in the other cases without severe symptoms developing.

We recognise that some more accurate method of dosage should be employed. We are recording, however, our preliminary experiments, and we purpose in future weighing the tuberculous material and emulsifying it in a known amount of saline. This done, however, we are still faced with the problem of standardisation; and taking into consideration the necessarily varying composition of the vaccinal material owing to its various sources, and also the absence of untoward and uncontrollable symptoms in our own cases, we see at present no more practicable method than the one used above of standardising it on the patient himself, always, however, commencing with a *very small* dose and carefully watching the symptoms produced. In making this statement, however, we limit ourselves to surgical tuberculosis.

Symptoms after inoculation of vaccine.—As the patients treated were attending the out-patient department of the Sick Children's Hospital it was impossible to obtain very systematic records. However, it was sufficiently determined that after the injection there were rise of temperature and malaise in most of the cases. In some such symptoms were slight or absent. The focal symptoms, however, present in all, were acute and always well marked. There was considerable congestion, in some cases to the extent of extravasation of blood. Caseation appeared to be hastened in certain of the cases. This may or may not be a disadvantage, and could possibly be avoided by a more accurate graduation of the dose.

In none of the cases was there any lesion—abscess or otherwise—produced at the site of inoculation. Such inoculation was done by painting the skin, usually of the upper arm, with tincture of iodine and inoculating the vaccine subcutaneously.

Synopsis of all Cases Hitherto Treated.

CASE 1.—Aged 7 years. Suffering from tuberculous cervical glands, the disease involving the tonsillar and upper carotid set of glands of the right side. No operation was performed. Treatment was begun by the injection of 5 c.mm. of the gland vaccine, and at intervals of seven days the injection was repeated with progressive increments of 5 c.mm. After the third inoculation there was considerable improvement in the gland condition, and locally the glandular swelling was more localised and discrete, and all trace of peri-adenitis had disappeared. Treatment was concluded at the end of two months, at which time the injection had reached an amount of 40 c.mm. The general condition had greatly improved and the weight had increased. Locally the situation formally occupied by the enlarged glands is now occupied by a cicatrised nodular thickening.

CASE 2.—Aged 2 years. Tuberculous disease of the elbow-joint. When 18 months old the child developed tuberculous disease of the elbow-joint. An operation was performed and a portion of diseased bone removed. One month later the disease recurred with abscess formation. The abscess was opened, but several tuberculous sinuses continued to discharge pus. There being no improvement the vaccinal treatment was then begun. The stock bone vaccine was used. After the second injection of 10 c.mm. there was a marked general reaction. The dose was reduced to 5 c.mm.; two succeeding doses of that amount were given without reaction, and the larger dosage was then proceeded with. After the fifth injection the improvement in the general condition became obvious and the arm condition began to improve. The injection

was stopped when a total of 50 c.mm. was reached. At that time the elbow condition was entirely healed, and the child had gained several pounds in weight.

CASE 3.—Aged 20 months. Multiple tubercle; tuberculous metacarpal left hand, tuberculous phalanx, right hand; tuberculous cervical glands, multiple tuberculous abscesses, not improving under ordinary treatment. The vaccinal treatment was adopted. The dosage was begun with 5 c.mm. of the bone vaccine, and increased by 5 c.mm. each week. After the second inoculation a change was observed, and from that time there was a steady and continuous improvement. The glandular condition was the first to improve; the multiple tuberculous abscesses ceased to appear, the tuberculous disease of the left metacarpal steadily improved, and at the termination of the treatment the thickening was practically unnoticeable. As regards the tuberculous phalanx of the right hand this had been operated on before the child came under our notice. A mixed infection had occurred, and it was found necessary to amputate the finger. In addition to the local improvement there was the marked general benefit; the child became brighter and steadily increased in weight.

CASE 4.—Aged 6 years. Tuberculous cervical glands involving the upper carotid chain of the right side. The treatment was begun with 5 c.mm. of the gland vaccine, and the increase continued without interruption. There was no general reaction observable, the glands steadily improved, and at the termination of the treatment had practically disappeared. Here, as elsewhere, there was marked improvement in the general condition.

CASE 5.—Aged 1 year. Multiple osseous tubercle involving the phalanges and metacarpals. The disease was of the typical spina-ventosa type with tuberculous osteomyelitis and the formation of a quantity of new subperiosteal bones. The treatment was begun with 5 c.mm. of the bone vaccine and continued over a period of two months, at the end of which time an injection of 40 c.mm. was given. There was no obvious general disturbance, there was a steady improvement, general and local, and the thickening of the affected bone has markedly diminished. The improvement has been so marked as to justify the cessation of treatment.

CASE 6.—Aged 15 months. Multiple osseous tubercle, affecting the phalanges and metacarpals of both hands. The inoculation treatment was begun with 5 c.mm. of the bone vaccine. It was continued without cessation for two months, with a dosage which steadily increased each week by 5 c.mm. After the fourth injection an abscess developed on the ring finger of the left hand, where the middle phalanx was infected with tubercle. The abscess was allowed to open spontaneously, and from it there was discharged a sequestrum which involved practically the entire phalanx. The discharge of such a sequestrum pointed to a considerable focal reaction in the part. The other lesions steadily improved, and are now entirely cured. There was a continuous gain in weight and benefit in the general condition. The treatment was concluded when a dose of 40 c.mm. had been reached.

CASE 7.—Aged 13 months. Tuberculous dactylitis. The treatment was introduced by the inoculation of 5 c.mm. of the stock bone vaccine. It was continued throughout nine weeks, and the injection amount was, as usual, steadily increased. The treatment was concluded with an injection of 45 c.mm., when the disease to all appearance was cured. The outstanding feature of the case was the progressive improvement, both general and local. At no time was there any anxiety from a general reaction.

CASE 8.—Aged 6 years. Tuberculous cervical glands. In this case the disease was exceedingly extensive, so extensive, in fact, as to preclude any question of operation. When first seen there was a single gland which was obviously caseating; it was removed, and from the diseased material vaccine was prepared. The case has been under treatment for ten weeks, and a dose of 50 c.mm. was last injected. The treatment has been justified by an improvement in the general condition and by a diminution in the degree of glandular disease. The disease has by no means disappeared, yet there is a very considerable general improvement. The case is still under treatment.

CASE 9.—Aged 9 months. Tuberculous cervical glands. This case constitutes one of the most striking of the series. When the child was first seen its general condition was miserable; it was wasted and anæmic. There was extensive tuberculous disease of the glands on both sides of the neck and upon each side a large abscess. The general condition of the child was so poor that any radical operative interference was out of the question. Each abscess was punctured and the pus allowed to escape. Vaccine treatment was begun. After the third inoculation the change was wonderful; the operation punctures had entirely healed, and the general condition had improved in a more obvious degree. The child is now perfectly cured, its weight has increased several pounds, the neck wounds are firmly healed, and on examining the neck it is impossible to identify any actually diseased glands. There is upon both sides a quantity of dense scar tissue.

CASE 10.—Aged 7 years. Tuberculous disease of metacarpal and radius. In this case the treatment began with an inoculation of 5 c.mm. of the bone vaccine. It has been continued with a steadily increasing increment. There has been an improvement in the general condition and in the local. The weight has increased and the appearances improved. The thickening of the metacarpal bone has almost disappeared. The patient is still under treatment.

Summary.

No attempt has been made to choose special cases in the above series. The first ten which presented themselves were put on the treatment. The majority were cases also which had not improved under the usual means of treatment.

The most encouraging results are seen in gland tubercle, the reason probably being that, from their greater accessibility to clinical examination, improvement was more readily detected. Even more striking than the local improvement has been the general change, and this is all the more important when one recollects that the hygienic surroundings of the patient were in no way improved while the treatment was going on. For example, in Case 9, a child from the poorest part of the city remained during the whole of the treatment in his original surroundings, and yet there appeared the most striking general improvement. Another noticeable feature is the rapidity with which improvement has made its appearance; in one case only has the treatment exceeded ten weeks. An improvement begins to be noticeable usually after the third inoculation.

As regards disadvantages there are possibilities of two. In one instance the general reaction was severe enough to prevent the progressive increase in dosage which one aims at, but in such circumstances a repetition of the smallest tolerable dose induces an immunity which soon permits the use of the larger amounts.

The second disadvantge is a local one—the treatment undoubtedly induces a considerable focal reaction. This may lead to the formation of abscesses and caseation, but, as has already been remarked, the exhibition of minute doses is sufficient to prevent such a complication.

Edinburgh.

NERVE-ENDING ANÆSTHESIA.

BY COLIN CLARKE, F.R.C.S. ENG., M.B., B.S. LOND.,
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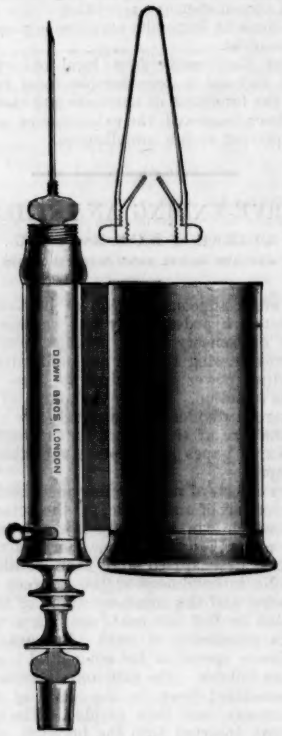
A 0·6 per cent. aqueous solution of beta-eucaine hydrochloride injected hypodermically has an immediate anæsthetic effect on sensory nerve endings, while the nerve cords and fibres passing through the infiltrated area retain their conducting power unimpaired for some considerable time after the injection. During the course of many operations the surgeon divides comparatively few nerve endings, considering the size of the wound, for the knife cuts a cleft which afterwards gapes and exposes the tissue or organ to be operated upon.

The primary objects of nerve-ending anæsthesia are concentration and economy of anæsthetic, for the actual quantity of beta-eucaine which can be safely injected into a patient is limited to about 6 or 7 grains. For the operation the tissues are first desensitised and then divided in successive layers. No interval need elapse between the injection of the anæsthetic and the commencement of the operation, for beta-eucaine in 0·6 per cent. strength acts on sensory nerve endings practically at once. For example, to perform the ordinary operation for congenital inguinal hernia one proceeds as follows. The skin and subcutaneous tissues are first desensitised down to the level of the external oblique aponeurosis, and then divided. The needle of the syringe is next inserted into the inguinal canal, either through the external abdominal ring or through the aponeurosis of the external oblique, and the surroundings of the spermatic cord rendered insensitive by a few syringefuls of beta-eucaine solution injected along the course of the canal. The inguinal canal is opened by dividing the external oblique aponeurosis and the exposed spermatic cord desensitised. The hernial sac is isolated, ligatured, and removed. If the conjoined tendon and the internal oblique muscle are to be sutured to Poupart's ligament they are injected with beta-eucaine solution and sewn together under the cord, the wound being finally closed in the usual way.

The anæsthesia produced by the beta-eucaine lasts for about half an hour. At the expiration of this period sensation begins to return, and though the open wound is insensitive to touch or pressure it is necessary to inject two or three syringefuls of beta-eucaine into the loose subcutaneous tissue on each side of the wound, in order to desensitise the skin before inserting the closing sutures. The needle of the syringe should be inserted immediately under the skin for a depth of half an inch, at points half an inch apart, along the edge of the wound. Ten minims of the solution should be injected at each of these spots. This method is also the quickest and easiest way of anæsthetising an ordinary deep cut or wound which requires suturing.

If the surgeon operates upon a hernia in this way with an ordinary 20-minim hypodermic springe it will be found necessary to give about 20 or 30 separate injections of Beta-eucaine solution in the course of the operation. This would be both awkward and tedious, so for my operations I have used a small magazine syringe holding 300 minims of beta-eucaine solution. Messrs. Down Bros., of St. Thomas's-street, London, S.E., made the syringe which is

of metal throughout (see figure); it is sterilised by boiling, and is kept during an operation with the other instruments in the operating tray. The magazine syringe consists essentially of a reservoir attached to the side of a hypodermic syringe. The cavity of the syringe can be placed in communication with either the reservoir or the needle by pressing the small bolt near the handle towards or away from the reservoir respectively



The syringe is shown full size.

Before commencing any operation the magazine of the syringe is filled with boiled beta-eucaine solution and the cap screwed on. The cap is, however, only loosely screwed on, two or three complete turns being sufficient; the object of this is to allow a small air leak to take place along the thread of the screw into the chamber of the reservoir. Without this minute air leak a rise in negative pressure would occur in the cavity of the magazine, as the syringe extracted fluid from it; and this increasing negative pressure would interfere with the aspirating power of the piston working in the barrel of the syringe. While charging the syringe from the reservoir the needle end must be held lowest, for the communicating passage between the syringe proper and the reservoir is at this end, and during aspiration must be kept under water. With this syringe one is able to give repeated hypodermic injections, and infiltrate a wide subcutaneous area through a single puncture.

The syringe is provided with two needles, a sharp one for penetrating the skin and a blunt one which is used after the skin has been divided. The blunt needle can be inserted into the various tissues without fear of wounding any blood-vessel or nerve. The anæsthetic fluid consists of a 0·6 per cent. solution of beta-eucaine in normal saline: beta-eucaine hydrochloride, 6 grammes; sodium chloride, 6 grammes; water, 1000 cubic centimetres. The chief advantage of this solution is its simplicity; it can be made up in large quantities, keeps well, and bears repeated boiling without losing its desensitising power.

When the beta-eucaine solution is injected into the subcutaneous tissues it at once enters the local lymphatic channels and commences to drain away. The desensitising fluid has thus a certain range of action owing to this lymphatic diffusion, and 30 minims of beta-eucaine solution injected into the subcutaneous tissue will anæsthetise roughly a sphere of tissue about one inch in diameter. If one allows then 30 minims of beta-eucaine per inch of incision, an operation is commenced by simply planting these anæsthetic spheres in the subcutaneous tissue along the line of the proposed incision. The 30 minims of solution, however, must not be injected at one spot; there must be a gradual flow of solution from the syringe as the needle is pushed along under the skin.

In situations where the subcutaneous tissue is thick, as, for example, in the inguinal region, two or three additional syringefuls of beta-eucaine should be injected into the deeper layers in order to insure a thorough anæsthesia of the underlying aponeurosis and external abdominal ring. The local anæsthesia produced in this way is at its maximum almost immediately after injection, and lasts for about half an hour; after this, sensation begins to reappear in the infiltrated part. By introducing the needle very obliquely through the skin, only the first needle puncture is felt by the patient, for all the succeeding punctures can be made through desensitised skin. It must always be remembered that the anæsthesia is strictly local and confined to the infiltrated tissue. The operation incision should be made, if possible, through the line of needle punctures in order to pass through the centre of the anæsthetic area. The tissues three-quarters of an inch to the right or left of this line are practically unaffected and are fully sensitive. The skin and subcutaneous tissue are divided immediately after the beta-eucaine solution has been injected, and the incision is carried down to the underlying deep fascia or aponeurosis. The operation is continued in the same way as above, the needle advancing first to infiltrate the various tissues, and the scalpel following immediately afterwards.

I have now used this method of anæsthetising with beta-eucaine hydrochloride for over 100 operations of various kinds, and have found it thoroughly satisfactory for hernias, varicose veins, varicoceles, sebaceous cysts, ganglia, external hæmorrhoids, removal of foreign bodies, and for the suturing of wounds, divided tendons, &c., and for minor amputations and circumcisions. Five cases of displaced internal cartilage of the knee were successfully operated upon, the cartilage being removed in each case. In three of these cases the anæsthesia was excellent, but in the other two anæsthesia was not complete. No pain was felt when the joint was opened, and the cartilage itself was insensitive, but a dragging, aching sensation was felt when retractors were applied to open out the capsular incision with the knee fully flexed.

For inflammatory conditions and in situations where there is dense scar tissue the anæsthesia is more difficult to obtain. Superficial abscesses, such as suppurating inguinal or axillary glands, are easily opened by first desensitising a straight line for the incision, and then injecting 30 or 60 minims of beta-eucaine into the abscess cavity itself. Five minutes should be allowed for the beta-eucaine to diffuse, and then the abscess can be opened and evacuated. Deep abscesses, as, for example, in the cervical regions, are difficult to anæsthetise. The inflammatory process appears to block up the lymphatic channels and prevent the diffusion of the anæsthetic fluid.

The prepuce of the penis is readily anæsthetised for circumcision, but in two recent operations, one for urethral stricture and the other for the removal of a dense fibrous cyst from the corpus spongiosum, it was found most difficult to desensitise the cavernous tissue. The fibrous trabeculæ opposed the diffusion of the anæsthetic, and the solution which entered the cavernous spaces was carried away in the blood stream. A few brief notes are added on the method of injection adopted for each operation.

Hernia (inguinal).—The desensitising process for this operation, down to the opening of the inguinal canal, has been already described. When the spermatic cord is exposed the coverings are raised at one spot with forceps, and the blunt needle is inserted obliquely through them. 20 or 30 minims of solution are injected along the cord, and the raised-up coverings divided with blunt-pointed scissors. The hernial sac can then often be seen lying at the bottom of a clear translucent bleb of infiltrated tissue, and is easily isolated from the other constituents of the cord. Before ligaturing and dividing the neck of the sac a few more

minims of beta-eucaine should be injected into the extra-peritoneal tissue at this spot. At the conclusion of the operation the skin must be again desensitised as previously described before inserting the closing sutures.

Varicocele.—The process is similar to the above; a line of skin and subcutaneous tissue is thoroughly anæsthetised at the neck of the scrotum. The spermatic cord is exposed and made to present in the wound. Beta-eucaine solution is injected through the coverings into the cord itself, and the enlarged veins are isolated, ligatured, and a portion removed.

Varicose veins.—The beta-eucaine solution is injected into the subcutaneous tissue along the course of the vein to be removed. If the vein is adherent to the skin the solution is injected at the sides of the vein and is made to spread in the subcutaneous tissue by a little pressure applied with the fingers along the line of injection.

Displaced internal cartilage of the knee.—For the removal of an internal semilunar cartilage a vertical line of skin and subcutaneous tissue is anæsthetised half an inch internal to the patella. 200 to 250 minims of beta-eucaine solution should be injected along this line and made to diffuse into the deeper lymphatic vessels by gentle pressure and massage. The incision is then carried down to the capsule of the joint. Before opening the joint by a vertical incision, 60 or 80 minims of solution must be injected along the line of the capsular incision, between the capsule and the subjacent synovial membrane, in order to thoroughly anæsthetise them both. Having opened the joint, a finger is introduced into it and the knee flexed. The semilunar cartilage itself is insensitive, and can be seized with pressure forceps and cut away with scissors or a scalpel. Pain is felt, however, in the capsule of the joint if the attachments of the cartilage are dragged upon too strongly, and the margins of the capsular incision may feel tender and ache if too much traction is applied with retractors to expose the interior of the joint. A few more minims of beta-eucaine should be injected into the margins of the incision before inserting the closing sutures.

Removal of sebaceous cysts, ganglia, small tumours, foreign bodies, &c.—The beta-eucaine solution is freely injected into the subcutaneous tissue all round the cyst, as well as under the skin in the line of the incision. Before commencing the operation the infiltrated tissue is well pressed and kneaded with the fingers in order to force the beta-eucaine into the lymphatic vessels surrounding the deeper side of the cyst or tumour to be removed.

Circumcision.—To produce a good anæsthesia for this operation some care is required. The deep layer of the prepuce which lies in contact with the glans penis may escape anæsthesia unless carefully infiltrated. In order to thoroughly infiltrate both layers of the prepuce it is best to first draw the extremity of the prepuce forwards and well away from the glans penis. In this position the inner and outer layers of the prepuce lie in close contact with each other. If the needle is now introduced at the tip of the prepuce, and passed down between the two layers towards the corona glandis, it can thoroughly infiltrate both surfaces. The needle should be inserted in this way at four or five different points on the margin of the preputial orifice, and 250 to 300 minims of beta-eucaine injected and well diffused in the subcutaneous tissue, back to the coronal attachment, before commencing the operation.

External hæmorrhoids.—30 or 40 minims of beta-eucaine solution are injected into the subcutaneous tissue around and over the enlarged or thrombosed vein. A radial incision exposes the vein, which is then seized with pressure forceps, isolated by dissection, drawn down, and cut away. The radial incisions are not sutured, and the divided veins, after crushing with pressure forceps, as a rule require no ligature

Minor amputations.—The subcutaneous tissue in the line of a racquet incision around the toe or finger to be removed is first freely infiltrated. The needle should be inserted on the dorsal surface of the toe and introduced first to one side and then the other of the phalanx. Infiltration of the periosteum renders the bone quite insensitive, but if the incision is to be carried through a metacarpo-phalangeal joint 30 minims of solution should be injected on each side of the joint to thoroughly desensitise it.

The above details form only a rough guide for the various operations, but it is hoped that they may prove of some use to medical men in the country or abroad, who have often to work alone, and find it difficult or inconvenient to obtain general anæsthesia for their patients. The chief points to be observed when using beta-eucaine hydrochloride in 0·6 per cent. strength as a nerve-ending anæsthetic are: (1) inject the anæsthetic freely in the actual line of the incision; (2) keep strictly to the infiltrated tissues; and (3) operate immediately after the injection.

THE NATURE OF COLON BACILLURIA.

BY ETHEL M. N. WILLIAMS, M.D. LOND., D.P.H. CAMB.

THIS investigation was undertaken with the hope of throwing light on the etiology of colon bacilluria and cystitis and on the relations of these two conditions. The urines of 70 cases, taken at random from patients seen in the course of a general practice, were examined for the presence of colon bacillus. A catheter specimen of the urine was always employed, and the strictest precautions were taken to prevent contamination from without. The disorders found correlated with the bacilluria were carefully noted in each case and tabulated.

Of the 70 cases examined, 44 (Series A) suffered from some chronic disorder of the intestine, usually of long standing. In the remaining 26 cases (Series B) there was no history of any chronic irregularity of the bowels; most of them complained of frequency of micturition or pain on passing urine, which in several dated from the passing of a catheter.

No case of colon bacilluria was found in Series B. The 16 cases of colon bacilluria found amongst the 70 cases examined all occurred in Series A; 2 only had definite symptoms of cystitis, though all 16 had some frequency of micturition. In other words, bacilluria occurred in a little more than 22 per cent. of the whole number of cases examined, while it occurred in more than 36 per cent. of Series A, and in none of Series B.

More light is thrown on the meaning of these figures by reference to the notes of individual cases.

1. *Results.*—In 4 of the cases of bacilluria it was only possible to obtain a single catheter specimen of the urine, so no statement can be made about the result of treatment as regards bacilluria.

In 9 of the remaining 12 cases (Series A, Nos. 5, 9, 13, 15, 18, 19, 32, 35, and 38) the intestinal trouble was successfully treated. In each of these a series of catheter specimens of the urine was examined during the course of the treatment, and in all but one of them (Series A, No. 18) it was found that the colon bacillus disappeared from the urine after the condition of the intestine became normal. In the 4 cases in which treatment lasted some time (Series A, Nos. 5, 13, 32, and 35) several catheter specimens were examined, and in these it was found that so long as the intestinal symptoms persisted the colon bacillus was always found in the urine, but that after the intestinal condition became normal it was always absent. In 2 of these cases (Series A, Nos. 32 and 35) an opportunity occurred many months after the disappearance of the intestinal symptoms of again examining a catheter specimen of the urine, and in neither case was the colon bacillus found. These facts put out of court the suggestion that the presence of the bacillus was due either to a chance infection of the urine in the bladder or to an accidental contamination of the specimen. In the one case (Series A, No. 18) in which the bacilluria persisted after the action of the bowels had become normal, a single specimen only could be obtained after the treatment was completed, and that only a few days after the very obstinate constipation had disappeared.

In the 3 remaining cases (Series A, Nos. 33, 36, 37) the intestinal disorder persisted in spite of treatment, and in all of these the colon bacillus was found present in every specimen of the urine tested.

2. *Treatment.*—It is noticeable that none of the 8 cases in

which the bacilluria disappeared were treated with a vaccine, nor did they receive any direct treatment of the urinary passages as by washing out the bladder or by the administration of any of the urinary antiseptics, as urotropine or helmitol. The treatment was entirely directed to the cure of the intestinal condition. Mild aperients, as cascara, senna, or aloin, usually combined with strychnine and belladonna, were given regularly over considerable periods, varied occasionally with salines or phenolphthalein. Liquid paraffin and olive oil were given occasionally with the design of softening fæcal masses and possibly of acting as an emollient to the intestinal walls. In one or two cases bismuth was given in doses of 20–30 gr. of the carbonate; in one or two milk soured with a culture of Massol's bacillus was given without any very obvious benefit. One case only (Series A, No. 13) was treated by repeated washing out of the lower bowel, as it was found that most patients resented the treatment. One case (Series A, No. 37) has been given injections of an autogenous vaccine after fruitless attempts, extending over many months, to cure the alternating diarrhœa and constipation by the methods employed in the other cases; so far, though the patient's general condition has improved, there are frequent attacks of diarrhœa, and the bacilluria persists.

3. *Symptoms.*—The symptoms found associated with the bacilluria were those commonly found in abnormal conditions of the intestine—giddiness, headache, foul tongue, bitter taste in the mouth, a great sense of fatigue and a slow pulse with low tension, together with chronic constipation, always of long standing, sometimes alternating with attacks of diarrhœa apparently caused by the irritation of hardened fæces. In Series A, Nos. 20 and 32, the diarrhœa had probably an independent origin. No. 13 was a marked case of so-called mucous colitis; No. 37 passed a good deal of mucus with the motions, but never the characteristic casts of the intestine. No. 5 had suffered for years from obstinate constipation, but when the first catheter specimen of the urine was examined she had an acute colon cystitis. No. 20 had a mild cystitis. In no other cases was the clinical picture of cystitis present. Some frequency of micturition always existed, but, except in the two cases of cystitis, it was never spontaneously mentioned, and was only brought out in reply to leading questions. In every case the urine was acid, but in several, especially in Nos. 13, 18, 20, 21, and 37, it was more or less turbid, and had a peculiar stale, fishy smell.

These facts point almost irresistibly to the conclusion that colon bacilluria is a late stage in a chronic disorder of the intestine, and that it is by traversing diseased intestinal walls that the organism usually gains access to the urinary tract.

I can offer no evidence as to the sex distribution of the condition, since all the cases I examined were women. The short straight female urethra has been supposed to offer facilities for an ascending infection, but it must be remembered that women are more subject than men to constipation, and therefore to the conditions dependent upon it.

A large proportion of the reported cases of colon cystitis have occurred in pregnant women. Amongst my 16 cases of colon bacilluria there were two pregnant women (Series A, Nos. 19 and 37). A very large number of women suffer from constipation and other intestinal disturbances during pregnancy; in fact, pregnancy is often the starting-point of persistent constipation.

In conclusion, I have to thank Professor H. J. Hutchens, D.S.O., professor of comparative pathology in the University of Durham, for help in the bacteriological work connected with this paper.

Newcastle-on-Tyne.

FORTY-THREE YEARS A MEDICAL OFFICER.—Dr. A. T. Blease, of Altrincham, who was recently elected medical officer for the Altrincham district of the Bucklow Union, had the pleasure of succeeding his father, who had held the same post for no less than 43 years, Dr. T. T. Blease having been appointed in May, 1869. At the meeting of the guardians at which Dr. Blease senior's letter of resignation was read, warm testimony was borne by several present to the efficiency and kindness which had marked their retiring officer's services.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTE ON A CASE OF SEPTICÆMIA FOLLOWING SEPTIC LARYNGITIS.

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SEPTICÆMIA is by no means a common sequela of septic laryngitis. The following notes of a case which displayed unusual symptoms may prove of interest.

A man, aged 45, came to St. Bartholomew's Hospital on the evening of Feb. 14th complaining of stridor and dyspnœa, conditions which had suddenly developed and had gradually got worse during the three previous days. He was a stout, plethoric man, weighing over 18 st. His condition when seen in the out-patient department was that of urgent dyspnœa with marked cyanosis. He was at once admitted to Abernethy ward under the care of Mr. Douglas Harmer, and preparations were made for tracheotomy. No history was forthcoming of any antecedent illness or occurrence which could account for his laryngeal affection. The larynx was seen to be markedly inflamed and œdematous. Moderate œdema of the hands and feet was also present; the urine contained a few epithelial casts and 0·1 per cent. albumin, and the case was regarded as one of œdema of the larynx associated with nephritis. Under palliative measures the dyspnœa rapidly decreased and in 12 hours respiration was completely unembarrassed. All trace of cyanosis had disappeared, but the vocal cords were still undistinguishable in the general laryngeal œdema. A culture was taken from the fauces and examination of a film showed the presence of B. pneumococci.

During the two following days the general condition improved, although the temperature had risen from 101° (on admission) to 102·6° F. A few bronchitic signs were audible in the chest. Very little urine had been passed since admission (40 ounces during the past 48 hours), but only a trace of albumin was present and no casts were seen. On Feb. 18th, the fifth day after the patient's admission, improvement was so pronounced that he was preparing to leave the hospital. His temperature had fallen to 98°, urine was passed in larger quantity (42 ounces in 24 hours), and respiration was perfectly normal. On the following day, however, the temperature rose suddenly, without ascertainable cause, to 102°. Almost exactly 24 hours later a rise of temperature to 104·6° occurred; on this occasion the pulse-rate increased from 60 to 120, the patient had a marked rigor and sweated profusely, but no cause for the fever could be assigned. He felt perfectly well and volunteered the information that he often suffered at home from similar "shivering attacks." He had seen service in South Africa during the last war, but had never had malaria. The blood was examined for the malaria parasite, with negative result; the urine was examined bacteriologically, but no organisms were found; a blood culture was taken. The leucocyte count this day was 22,000 per cubic millimetre.

During the next five days rigors occurred daily at irregular intervals. On Feb. 25th two rigors occurred, and on this day the patient complained of stiffness in the right arm "like rheumatism." Nothing abnormal could be seen or felt in the affected limb, and in spite of the extreme difficulty with which examination of tissues so adipose was conducted, it was certain that no increase of the circum-axillary diameter was present. On the following day the stiffness had developed into definite pain, the situation of which was referred nearer the shoulder-joint. Slight tenderness could be elicited over the coracoid process, and movements at the joint which had been slightly affected during the previous day were now markedly impaired. The patient was seen by Mr. G. E. Gask, and exploration of the right shoulder-joint was undertaken. The joint was opened anteriorly. A small quantity of very thick pus was evacuated, a film of which showed the presence of a short-chain streptococcus. Two large drainage-tubes were inserted through the posterior

axillary wall and the wound was treated by constant irrigation. 25 c.c. of anti-streptococcal serum were given subcutaneously. A vaccine was prepared and was subsequently injected on March 14th and 15th. Temporary improvement followed the operation, but a rigor occurred on March 1st and daily afterwards until March 13th. On the 15th a blood culture (which had hitherto been negative) was positive (streptococci) in 18 hours. On the 19th sudden dyspnœa set in and death rapidly occurred.

Post mortem, the larynx was slightly injected and the mucous membrane œdematous but not ulcerated. The heart was flabby, and large greenish vegetations were present on the tricuspid valve. Streptococci were seen in films taken from the heart's blood. The lungs showed recent pleurisy on both sides with septic infarcts in both upper lobes. The spleen was large, soft, and diffluent. The liver was large and fatty. The kidneys were pale; the capsule stripped easily. The right shoulder-joint was natural. Suppuration was present in the subacromial bursa, and a small patch of bone on the neck of the humerus was bare.

St. Bartholomew's Hospital, E.C.

THE X RAY TREATMENT OF HYPERTRICHOSIS.

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IN the proceedings of the Electro-therapeutic Section of the British Medical Association held in July at Liverpool, and reported in your columns, I was interested to read an account of a case of hypertrichosis apparently cured by X rays, and also to note that opinions were expressed that telangiectasis would develop subsequently on the exposed regions. My experience with a case treated over two years ago is of interest in this connexion.

Early in 1910 a young woman came to me for advice concerning a profuse growth of hair, partly downy, partly of strong growth, covering both cheeks and chin. I treated both cheeks according to the method described by Professor Bordier in the *Archives of the Röntgen Rays* that year. I used an aluminium filter 0·5 mm. thick, and the pastille lying on the skin was turned almost to tint O, Bordier, on three alternate days. The hairs fell, and grew again after several months. Repetition of the treatment made all except two or three hairs disappear, and the cheeks remained clear and smooth and normal in appearance. I resolved to wait two years before publishing the case as successful or attempting the treatment on other patients. About March, 1912, I observed a few faint telangiectases on both cheeks, and these had increased by July. I now await further developments with much disappointment. I regard it as a duty to publish this record, lest the first happy results of X ray treatment tempt medical men to use that method in cases where the more tedious but less uncertain method of electrolysis ought to be employed.

Harley-street, W.

Reviews and Notices of Books.

Allen's Commercial Organic Analysis. Vol. VI. Fourth edition, entirely re-written. Edited by W. A. DAVIS, B.Sc., A.C.G.I., and SAMUEL S. SADTLER, S.B. London: J. & A. Churchill. 1912. Pp. 726. Price 21*s.* net.

FROM a medical point of view this volume perhaps exceeds in interest the previous members of the series, inasmuch as it deals chiefly with the vegetable alkaloids. It naturally starts with a consideration of the amines and ammonium bases, under which title Mr. W. A. Davis, one of the editors, leads off with a practical contribution. In this section antipyrine and its derivatives come under notice, and the space given to pharmaceutical and analytical considerations is justified by the prominence given to these antipyretics in medicine. Aniline and its allies follow in a surprisingly short chapter, though doubtless from the analyst's point of view the treatment is ample. When we pass over the next section on naphthylamines, pyridine, quinoline, and acridine bases, which again is not extensive though to the point, we come to the main purpose of the volume—the story of the alkaloids. A good beginning has been made, for as far as this volume goes familiar examples like nicotine, aconite, atropine, cocaine, morphine and its congeners, strychnine, cinchonine and its allies, berberine and its associates, caffeine, and theobromine are adequately treated, with, of course, special regard to questions of assay. The completion of the list is promised in the next volume. It is 20 years since the last edition of this volume was issued, and when we reflect upon the extent to which the chemistry of the organic bases and alkaloids has advanced over this period, the collection of new materials in this department is seen to add great interest to the monographs. They are contributed by 12 different authors, all of whom have specialised in their subjects.

The opening chapter, which is historic and general in character, recording further the common principles upon which the isolation, purification, and estimation of alkaloids depend, is an admirable and instructive essay. "Properties and reactions" forms a valuable feature also of this portion, as it shows clearly that the writer is conversant with the developments and records which recent work has furnished. The articles on coca, opium, nux vomica, cinchona, tea, coffee, and cocoa are full of interest to those who in particular work in the field of "commercial organic analysis," while they will serve as a source of useful information to the general reader on the look-out for the last word on the subject.

Frankly, we were somewhat disappointed with the early volumes of this work, but the recent additions lead us to revise our impression and take a much more favourable view.

Tunnel Shields and the Use of Compressed Air in Subaqueous Works. By WILLIAM CHARLES COPPERTHWAITE. Second edition, revised. London: Constable and Co., Limited. 1912. Pp. 289, with 260 illustrations and diagrams. Price 31*s.* 6*d.* net.

THAT this voluminous and technical work should appear as a second edition is ample testimony to the fact, drawn attention to by the author, that although the employment of a shield, with or without the aid of compressed air, in tunnelling operations is of English origin, and the length of tunnels so constructed in this country is many times greater than the total amount of similar work elsewhere, the references to the matter in English engineering text-books are quite scanty.

To various engineers must be attributed the credit of inventions tending to bring the method of subaqueous tunnelling by means of a shield and compressed air to its present perfection. The use of the shield was first suggested by Brunel in 1818. Twelve years later Cochrane described the application of compressed air to shaft-sinking and tunnelling in water-bearing strata. The advantages of its use in the case of shafts were soon fully appreciated, and it came into general use for the sinking of caissons for the foundations of bridge-piers and similar structures. One of the greatest advances in subaqueous tunnelling was seen in the construction of the Tower subway, where the shield designed by Greathead to move forward in one piece in conjunction with an iron tunnel lining was employed. The first tunnel in which compressed air was used was that under the Hudson River to connect Jersey City with New York. During the construction of the City and South London Railway (1886–90) compressed air was first employed in conjunction with a shield.

Explained briefly, the modern shield may be described as a cylindrical thimble fitting over the last completed segments of the tunnel; this is provided with a cutting edge

projecting into the soil and the distal or closed end is furnished with doors and shutters to allow of access from the interior of the tunnel to the soil "face." When sufficient earth is excavated to allow a forward movement this is effected by means of hydraulic jacks, which take their leverage from the completed rings of the tunnel lining. When a sufficient movement has been made, hydraulic erectors place the segments of the new ring in position, and these are then bolted together. The great advantage of the iron lining over masonry is that it attains its full strength at once, and so can sustain immediately the back thrust of the shield rams. The bulk of the present volume is occupied with a minute description of the various modifications of shields, tunnel lining, and other devices that have been adopted in the successive series of tunnels which have been constructed during the past quarter of a century. The part of the volume of medical interest is confined to Chapter 2, which deals with the use of compressed air in engineering work and the illness arising therefrom.

The fact that by means of diving bells it is possible for human beings to work in and remain for some time under water in a compressed atmosphere was known in the sixteenth century, but the absence of any mechanism for renewing the air prevented any prolonged immersion, as the working chamber had necessarily to be brought to the surface at short intervals on account of the vitiation of the atmosphere. In 1721 Halley, an English physician, described an arrangement by which kegs of air were passed down to the bell and opened at will by the labourer. In 1778 this crude method was replaced by pumps for the injection of fresh air. In 1830 the first complete scheme for mining in subaqueous or water-bearing material was put forward, all previous applications of the system having been in open water only. In that year Cochrane took out a patent for the employment of compressed air in shafts and tunnels in water-bearing material for the purpose of keeping back the water. A brief *résumé* is included in the present volume of the principal medical observations made in connexion with compressed air illness, or so-called caisson disease, and the precautions now usually adopted. Stress in laid on the importance of a sufficient supply of fresh air per man per hour, an observation which has been amply borne out by recent tunnel experiences. The book, which is copiously illustrated, will be indispensable to all engineers of subaqueous tunnels, and furnishes also medical men with much of the information that they require. The volume reviewed below gives this medical information in an exhaustive manner.

Caisson Sickness and the Physiology of Work in Compressed Air. By LEONARD HILL, M.B. Lond., F.R.S. International Medical Monograph Series. London: Edward Arnold. 1912. Pp. 255. Price 10*s.* 6*d.* net.

Dr. Leonard Hill's monograph on caisson sickness affords an excellent illustration of the value to the industrial worker of the study, by rigorous scientific investigation, of the conditions under which his work takes place. It is no exaggeration to say that the results of Dr. Hill's 15 years' research into the causation, cure, and prevention of compressed-air illness have already proved to be so far-reaching that the old, bad methods of procedure in compressed-air work have gone for ever and a new era has been entered on; work hitherto dangerous has been made safe, and the limits hitherto set to the work have been greatly extended.

The description which Dr. Hill gives of the historical evolution of the diver's vocation reads like a romance, from the days of the naked diver to these times of exact knowledge, when he descends tranquilly to the depths of the sea clad in a dress towards the perfecting of which years of scientific experiment and experience have contributed. Dr. Hill also gives a very complete historical *résumé* of the development of our knowledge of divers' paralysis. As long ago as 1854 two French observers, M. Pol and M. Watelle, drew important conclusions as to the causation of the affection, yet their work has been curiously overlooked. They showed that compression up to 4½ atmospheres is not in itself to be feared, and can be endured without any trouble; it is only the return to the normal pressure that is to be dreaded, and the risk is proportional both to the period and degree of compression and to the rapidity of decompression. They fully appreciated the necessity of immediate recompression as a cure when alarming symptoms set in. Dr. Hill amplifies and corroborates these views, on the acceptance of which modern diving technique depends. He shows that the multifarious symptoms produced by the presence of free gas in the blood or tissue fluids vary with the place where the gas is mainly lodged. Air bubbles formed in unyielding tissues, such as ligaments, fasciæ, and periosteum, will cause "bends"—i.e., pains—of greater or less severity. Practically all caisson workers suffer at one time or another from fleeting pains shortly after decompression. The distribution of the bubbles of gas, further, varies with the activity of the circulation in various parts. Thus they are often found abundantly in the body fluids, in the bile, in the urine, and particularly in the synovial fluid. Dr. Hill describes in some detail the magnificent series of experiments made by Bert (1878), whereby it was shown once and for all that this gas, on the presence of which in the body tissues the symptoms of caisson disease depend, is nitrogen; at the same time we must congratulate Dr. Hill himself on the admirable series of experiments conducted by himself and his collaborators with a view to establishing and confirming Bert's work. They have shown that bubbles are found most frequently in the fat, since fat absorbs five times as much nitrogen as water, and also since the circulation through the fat is comparatively poor. These facts readily explain the affinity of nitrogen for the central nervous system; the fatty nature of the myelin sheaths of the white matter provides a seat of predilection for bubble formation, and it is where the circulation through the cord and elsewhere in the cerebrospinal axis is most sluggish that the gas formation is most prone to occur.

These are important findings from both clinical and pathological standpoints, and they materially elucidate the nature of the disease. There is, however, much more in this monograph of interest and of importance. The chapters on the theory and practice of decompression and on the treatment of caisson sickness by recompression are replete with practical suggestions based on scientific experiment, and are calculated to lighten the lot of the diver in many ways and to a notable degree. It is rarely that science and art advance so definitely hand in hand as in the diver's calling, and the volume before us supplies abundant evidence of what can be accomplished by experimental methods for the good of a by no means unimportant section of the community, whose work is none the less indispensable because it does not often come prominently before the eye of the public.

Clinical Symptomatology, with Special Reference to Life-Threatening Symptoms and Their Treatment. By ALOIS PICK, Professor of Medicine, University of Vienna, and ADOLPH HECHT, Pediatrician, St. Anne's Hospital, Vienna. An authorised translation under the editorial supervision of KARL KONRAD KOESSLER, M.D. (Univ. of Vienna), Instructor of Clinical Medicine, Rush Medical College. London and New York: D. Appleton and Co. 1911. Pp. 833. Price 25*s.* net.

IT is a matter of some difficulty to explain briefly the scope and aim of this interesting and instructive book, since the subject matter, though carefully arranged, is certainly discursive. In the preface we are told that "clinical

instruction aims to banish a set symptomatic theory from the mind of the student of medicine." The authors rightly insist that therapeutic measures should be directed against the cause of disease, and where a specific therapy is not available, that the recognition and treatment of those symptoms which indicate danger or threaten life become the most important tasks. They have, therefore, studied symptoms in disease from this standpoint, interpreting danger not only to mean the conditions that threaten life, but also to include symptoms indicating persistent damage.

General symptoms are first discussed from this point of view, including conditions of cachexia, emaciation, obesity, metabolism, and anomalies of temperature, which are categorically considered together with their causation, mode of origin, and significance. Symptoms associated with various individual systems or organs are then examined in a similar manner—e.g., disturbances of the heart's action, pain in the chest, cough, vomiting, hæmorrhage, dropsy, headache, sleeplessness, loss of consciousness, vertigo, and nystagmus. The examination of sputum, of the stomach contents, the fæces, and the urine, are also considered, and the light they throw upon the interpretation of symptoms is discussed. Chapters are devoted to severe general infections and auto-intoxications. Each subject dealt with is examined at length, its particular pathology is considered in so far as this is necessary for its interpretation, and indications for treatment are fully discussed, prescriptions being given in many instances. The value of other therapeutic measures is also described where they are available. The names of authorities are often appended to statements quoted, but actual references are rarely given.

The book is of more value as a work of reference in regard to the prognostic and diagnostic significance of symptoms, and the scientific application of treatment, than as a text-book, although practically the whole field of medicine is reviewed. Although it is diffuse in places, and although the arrangement of the subject matter is hardly systematic, yet it is a thoughtful and suggestive book, and one which should be useful practically for reference, as it has a good index.

LIBRARY TABLE.

The March: Its Mechanism, Effects, and Hygiene. By Lieutenant-Colonel P. HEHIR, M.D. Brux., I.M.S. Calcutta: Thacker, Spink, and Co. 1912. Pp. 79. Price 3*s.* 6*d.* net.—This brochure is an expansion of two lectures delivered to military officers in India, and will be of use to a wider circle than the original audience. The physiology of marching is dealt with, also the principles of training, in addition to the subjects mentioned in the title, so that the treatment of the subject is fairly comprehensive. There are one or two loose expressions which suggest lack of care in revision of the lectures—e.g., "carbon in combination with the invisible CO_2" in expired air. When Colonel Hehir states on p. 11 that "nothing can be said against the khaki drill used by our troops in India," he is certainly not expressing the opinion of either combatant or medical officers in general. We are glad to learn that the new system of physical training for troops has been introduced into the Indian Army during the past year. It will, no doubt, prove as beneficial as in the case of troops at home. It is mentioned, however, that several adjutants do not consider it to be any improvement on the old method of training. The author considers boiling to be on the whole the most practicable way of sterilising a water-supply on the march; but some instructions should have been given as to improvised methods of filtration, or at any rate clarification, of water in case heat sterilisation is impracticable. There are several misprints, such as "efficiency" for "inefficiency," on p. 54, which suggest hurry in preparation; but there is much in the book that will be useful to all officers, combatant or medical, who wish to understand the physiology and hygiene of the march.

Entomology for Medical Officers. By A. ALCOCK, C.I.E., M.B. Aberd., F.R.S. London: Gurney and Jackson. Pp. 347. Price 9*s.* net.—This conveniently sized volume is a little more liberal in scope than its title implies. For the author, though throwing the chief part of his energy into a fairly detailed account of insects, gives some slighter notes upon the rest of the arthropoda, including scorpions, crustacea, and so forth. "This volume," observes the author in his preface, "is printed in response to repeated requests from members of my classes at the London School of Tropical Medicine," and obviously, therefore, must deal principally with those arthropods concerned in the carrying of disease. Dr. Alcock, who is an accomplished student of zoology, has far too clear a conception of his science to present the reader with the information required by him in a disconnected form. We find, accordingly, an annectant introduction, placing the student in a position to appreciate intelligently the actual facts of structure and life history which are important for him as a medical man to understand. The introductory part, however, occupies only 22 pages, and cannot be expected to put the reader in possession of more than the barest outline of the general aspects of zoology with which it is desirable that he should be acquainted. It is possibly rather too short, even for this condensed text-book. Zoogeography is perhaps more important in connexion with parasites than is admitted by some; and zoogeography does not consist merely in a division of the earth into regions, as might be inferred by Dr. Alcock's readers. Nor is he absolutely accurate in those facts which he mentions. The insectivora are not totally absent from the Austro-Columbian province, as the author would have us believe, for the West Indian solenodon may be at once quoted. A useful survey of what a parasite is and what it is not forms a considerable part of the introductory matter, and after this the author gets to work upon his main theme. The various groups of arthropoda are treated seriatim, commencing with the insecta.

The Indian Medical Service. Being a Synopsis of the Rules and Regulations regarding Pay, Promotion, Pension, Leave, Examinations, &c., in the I.M.S., both Military and Civil. By Major B. G. SETON, V.H.S., and Major J. GOULD, Indian Medical Service. London: W. Thacker and Co.; Calcutta: Thacker, Spink, and Co. 1912. Pp. 165. Price 7*s.* 6*d.*—It was a happy idea of the authors to collect the various regulations respecting the Indian Medical Service, and express and explain them in such a way as to be intelligible to everyone concerned. Major Seton is secretary to the Director-General, and Major Gould is staff officer for the Medical Mobilisation Stores of the Third Indian Division. These officers are therefore so situated as to be able to speak with authority in the interpretation of Red books. It is undoubtedly the case that difficulty is often experienced in obtaining information that exists, but is latent rather than patent in the volumes of Regulations. Moreover, their true inwardness sometimes needs unfolding. Major W. W. Webb performed a similar useful office in 1890, but lapse of time has rendered his work in many respects out of date. The present manual should be in the hands of all medica officers of the Indian Service; it is interleaved so that the alterations which occur from time to time may be incorporated.

MISCELLANEOUS VOLUMES.

To attempt the elucidation of such a department of human knowledge as psychology in 250 small pages is a courageous act on the part of Dr. WILLIAM MCDOUGALL, but he has, we think, attained a fair measure of success in

his contribution to the Home University Library. (*Psychology: the Study of Behaviour.* London: Williams and Norgate. 1912. Price 1*s.* net.) It is not very easy reading, but that is in the nature of the case. The author prefers to define psychology as the science of the behaviour of living things rather than as the science of mind or the science of consciousness. He considers that in the study of animal behaviour "lies our best, perhaps our only, hope of answering the question—Are acquired characters transmitted?" The book is well worth reading and well adapted to its purpose.——Professor J. G. MCKENDRICK, in his volume in the same series (*The Principles of Physiology.* 1912. Price 1*s.* net), states that it is in no sense a text-book, but rather an attempt to state the leading principles and facts in such a way as will be understood by an intelligent reader without special scientific training. The author's name is sufficient guarantee for the soundness of the teaching. The mass of facts presented is, however, so large, and the technical terms so numerous, that the little volume is almost too concentrated for a beginner. The plan of the series does not apparently include any pictorial illustration, which would seem to be indispensable for the understanding of some portions of this subject. The volume is very interesting and suggestive.—— For those for whom it is intended—viz., hospital probationers—a little book entitled *Physiology and Anatomy made Easy* (London: The Scientific Press, Limited. 1912. Pp. 104. Price 1*s.* 6*d.* net.), by LUCY BROOKS, late Sister at the Victoria Hospital, Netley, should prove useful. It should also be serviceable to those entering on a course of first-aid study, and might fulfil an admirable purpose as a text-book in girls' schools. It is exceptionally clearly and simply written, and is couched in such terms and illustrated by such analogies that it should be understandable by every intelligent person. We have not noted any serious inaccuracies, though in some places the mode of expression might be changed with advantage to avoid ambiguity. For instance, on p. 22 it is stated that "the auricles and ventricles on each side of the heart communicate with each other." There are only one auricle and one ventricle on each side of the heart. Again, on p. 14, the ovaries are omitted in enumerating the contents of the abdomen (pelvic portion) though the uterus is mentioned. It is surely hardly correct to say, as on p. 84, that the ovaries "are placed in front of the rectum on either side of the uterus." The uterus is said to be "a hollow muscular organ which receives the ovum and expels it when developed; before birth it is called the fœtus." Meaning is clear, but grammatically the statement is untrue. In spite, however, of minor blemishes, the book is distinctly meritorious.

Nurses, house surgeons, and others to whose lot it falls to make the necessary arrangements for an operating surgeon, as well as those practitioners whose opportunities for surgery are occasional, will find very serviceable a little book by HAROLD BURROWS, M.B., B.S. Lond., F.R.C.S.Eng. (*Surgical Instruments and Appliances Used in Operations.* An Illustrated and Classified List with Explanatory Notes. London: Scientific Press, Limited. 1912. Pp. 103. Price 1*s.* 6*d.* net.), now in its fourth, revised and enlarged, edition. The operations are grouped as in regional surgery, and a list of the instruments, dressings, &c., required is given, while a very large number of the instruments are figured. The anæsthetist's table, out-patient departments and consulting rooms, operations in private houses, the care and sterilisation of instruments, and the preparation of surgical materials, all receive consideration.——All social workers realise the harm that results among the poor from the use of badly selected food and faulty methods of cooking, so that any advance towards remedying the evil is a step in the right direction. *Food for the Invalid and the Convalescent*, by WINIFRED STUART GIBBS, Dietitian for the New York Association for Improving the Condition of the Poor (New York: The Macmillan Company. 1912. Pp. 81. Price 3*s.* 6*d.*), has been compiled especially to help the physicians of the Vanderbilt Clinic in carrying on intelligent dietetic treatment, but it also aims to help other physicians and social workers in their efforts to combat disease. Miss Gibbs has had the assistance of several medical men in America in the compilation of her book, the keynote of which is contained in the opening sentence: "It is not necessary to buy the most expensive food in order to get the best; the important thing is to get the *right* food, so that the money spent will give as much strength as possible." After general directions as to the storing and cooking of foods, Miss Gibbs shows how best to prepare a variety of dishes for the invalid and convalescent, and afterwards deals with special menus and diets for the healthy. The book is a useful one.

JOURNALS AND MAGAZINES.

The Quarterly Journal of Medicine. Edited by WILLIAM OSLER, J. ROSE BRADFORD, A. E. GARROD, R. HUTCHISON, H. D. ROLLESTON, and W. HALE WHITE. Vol. V., No. 20. July, 1912. Oxford: At the Clarendon Press. Price 25*s.* per annum; single numbers, 8*s.* 6*d.* net each.—The contents of this number are: 1. Congenital Atresia of the Bile Passages, by Lindsay S. Milne. A case is recorded and the conditions found on necropsy are described, the histological appearances being illustrated by plates. The pathology of the condition is discussed and a bibliography is appended. 2. The Acidosis Index: a Clinical Measure of the Quantity of Acetone Bodies Excreted in the Urine, by T. Stuart Hart. A method of obtaining a measure of the degree of acidosis sufficiently accurate for clinical purposes, and depending upon the ordinary colour reaction tests for acetone and diacetic acid, is described. 3. An Epidemic of Gangrenous Dermatitis, by F. C. Purser. An outbreak of this condition occurring in the wards of the Hardwicke Hospital, Dublin, is carefully described, and the appearances presented by one of the cases are shown in a good coloured plate. In some of the more severe cases, but not in others, bacilli belonging to the typhoid-coli group were found. Dr. Purser was not able to draw any definite conclusion as to the microbic origin of the lesions from his observations. 4. The Origin of Chronic Ulcer of the Stomach in the Acute Variety of the Disease, by Charles Bolton. From a careful study of the clinical and pathological characters of ulcers of the stomach Dr. Bolton concludes that it is by the extension of an acute ulcer and the secondary inflammatory thickening affecting it which results from the unhealed condition of the ulcer that a chronic ulcer arises. The funnel shape of an ulcer is not the result of vascular occlusion, but is the consequence of its mode of spread. The paper is illustrated by numerous plates. 5. A Research upon Combined Mitral and Aortic Disease of Rheumatic Origin: a Contribution to the Study of Rheumatic Malignant Endocarditis, by F. J. Poynton and Alexander Paine. The authors' general contentions are summarised in the following sentence: "That from a study of severe heart disease of rheumatic origin involving lesions to two important valves we find all gradations between simple and malignant endocarditis, and additional and striking proof of the existence of a malignant rheumatic endocarditis." This paper is illustrated by a coloured plate and numerous photographic reproductions. 6. A Case of Thomsen's Disease, by Leonard Findlay. The etiology and pathology of this condition are discussed and a brief list of references is appended. 7. A Further Note on Ochronosis associated with Carboluria, by A. P. Beddard and C. M. Plumptre. The patient was a man who for at least 40 years had dressed

some ulcers on his legs daily with carbolic oil. An account is given of the necropsy upon this case and two coloured plates show the appearances on the face and in some of the tissues. 8. Critical Review: The Sensitised Vaccine of Besredka, by M. H. Gordon. Dr. Gordon states that from the experimental evidence the results obtained on animals with the method of Besredka are very encouraging, and that the method forms an advance on previous methods of producing immunity. This number also contains the minutes of the proceedings of the sixth annual general meeting of the Association of Physicians of Great Britain and Ireland held at Glasgow.

The Journal of Laryngology, Rhinology, and Otology.—The issues for July and August justify this journal's sub-title of "A Record of Current Literature Relating to the Throat, Nose, and Ear." These numbers contain very little original matter, the pages being largely given up to *précis* reports of the proceedings of the societies on the continent, as well as of those in this country, and to abstracts of papers published in journals specially interested in diseases of the throat, nose, and ear. To the August number Dr. Georges Gellé contributes a paper on the Teaching of Oto-Rhino-Laryngology in France. The paper deplores the opposition to advance in some quarters by certain personal influences, and everywhere by financial considerations, and concludes with the following sentence: "For the French Republic, which lavishes money without stint on elementary education—with, often, but a mediocre result—behaves towards higher education in the most miserly fashion." In view of the discussion which was held at Liverpool, conjointly by the section of Laryngology and Rhinology with that of Otology, on the training of the specialist, and which was reported in our issue of August 17th, p. 453, Dr. Gellé's paper doubtless will not only be read with interest, but his sentiments will be re-echoed.

Bibliographische Monatsschrift (Monthly Bibliographical Review—Revue Mensuelle Bibliographique). Hamburg: Rettig and Kollmorgen. May, 1912. Band I., M. I. Yearly 30 marks, or 20 marks cash.—The first issue of this "Universal Gazette of Medical Literature," the preliminary announcement of which was commented on in THE LANCET of April 20th (p. 1076), is before us. We do not see any occasion to modify or alter the judgment then expressed. The cross indexing is hardly well done, many important reference words not being indexed, while unimportant ones find a place in their alphabetical order. As an instance of the first class may be taken the reference, Bubonic Plague in South Africa, to which no cross reference appears under either of the two most important words—viz., "Plague" and "Africa" (or "South Africa"). In the second class a book on the "Human Eye" is indexed under "Human" but not under "Eye." Again, papers on "The Influence of Acids [on] the Reduction of Asterial (*sic*) Blood" and "The Influence of Salts on the Action of Rennet in Milk" appear under "Influence," but not under "Acids," "Salts," "Blood," or "Milk," to which headings one would naturally turn. Misprints abound—e.g., anæsthitics, blood-ressel, Listology. In our previous comment we referred to the meagre representation of English literature. Analysis of the first 25 pages of the journal gives the following figures: Total number of titles referred to, 867; English titles, 32; American, 11; French, 50; all other languages, 23. It will thus be seen that references to German literature constitute 751 of the total number, while the literature published in all the other tongues together numbers only 116 titles—hardly a satisfactory showing for a gazette of the universal literature of medicine. The work is far behind the careful models of the *Index Medicus*, published by the Carnegie Institution, Washington, D.C., and the *Index Catalogue of the Surgeon-General's Library at Washington.*

THE

BRITISH MEDICAL ASSOCIATION.

EIGHTIETH ANNUAL MEETING IN LIVERPOOL.

—o—

THE SECTIONS.

ELECTRO-THERAPEUTICS AND ANATOMY.

FRIDAY, JULY 26TH.

Presidents, Mr. C. THURSTAN HOLLAND (Liverpool) and Professor WILLIAM WRIGHT (London).

A COMBINED meeting of the sections of Electro-therapeutics and Anatomy was held on Friday, Professor WILLIAM WRIGHT occupying the chair.

A discussion was opened by Dr. A. F. HERTZ (London) on

The Normal Stomach.

Dr. Hertz said that in recent years anatomists had concerned themselves more and more with the relationship of structure and function, and had attempted to discover the anatomy of organs as they existed in life. They soon recognised that the flaccid sac which was generally found post mortem differed greatly from the living stomach, but many years elapsed before the introduction of the X ray examination of the stomach after bismuth meals made it possible to investigate the anatomy of the organ of living individuals. Modern surgery had added little to our knowledge, as the anatomy of the stomach seen in the operating theatre hardly differed from that seen in the dissecting-room; the examination in both cases was made in the horizontal position, and an anæsthetic generally gave rise to the same relaxation of tone which occurred after death. Attempts had been made to fix the stomach in its natural condition after death by filling it with formalin and by freezing it. The former method had the drawback that formalin gave rise to contractions which did not exist in life, and the stomach was fixed by both methods in the form present immediately after death, which was generally very different from that occurring during active life. In other cases the depressions caused by peristaltic waves, which in life were constantly moving towards the pylorus, were fixed, and were likely to be mistaken for permanent indentations. Accurate experiments showed that bismuth oxychloride mixed with the food produced no change in the tone of the muscular coat of the stomach nor any distortion as a result of its high specific gravity. Simple precautions prevented the production of distortion by the divergence of the rays, and the use of the screen instead of skiagraphy rendered it possible to distinguish permanent from temporary depressions in the surface of the stomach. It was important to remember that the information obtained from the X rays required correction with the aid of that derived from ordinary anatomical methods, as the shadow produced by the rays merely represented the stomach projected on to a flat surface, although in reality the organ was not flat and its axis did not lie in a single plane. Insufficient attention had been paid, both by anatomists and radiographers, to the bulk of the gastric contents when the size and shape of the stomach had been described. What was really required was a knowledge of the shape, size, and position of the empty stomach, of the stomach after the consumption of a special bismuth meal, which was required as a standard with which abnormal stomachs could be compared, and finally of the stomach after a large meal has been eaten. The organ adapted itself by variations in the tone of its muscular coat to the bulk of its contents, so that the intragastric pressure remained constant, and the level of the upper limit of the gastric contents in the erect position did not alter with changes in their bulk. The nomenclature used by Cunningham had been adopted, as it had the advantage of being perfectly definite, and its universal adoption would put an end to the confusion that existed at present in the descriptions of the stomach in health and disease. The term "pyloric antrum" had been employed with so many different meanings that it is best to discard it. The stomach could be divided into a larger cardiac part and a smaller pyloric part. The cardiac part consists of the fundus and body, the fundus being the segment of the stomach which lay above a horizontal plane passing through the cardiac orifice. The body was situated entirely to the left of the middle line

and was nearly vertical in the erect position, but became oblique when the recumbent position was assumed. The incisura angularis, a well-marked depression on the lesser curvature, separated the body from the pyloric part of the stomach, but there was no definite depression on the greater curvature marking the separation. The pyloric part consisted of the pyloric vestibule and pyloric canal. The former was directed upwards, slightly backwards, and to the right, and it generally reached just beyond the middle line. The pyloric canal was about 3 cm. in length, and was surrounded by a great thickening of the circular and longitudinal coats. In the empty condition the upper third of the stomach was pear-shaped and contained gas. The rest of the organ passed to the pylorus in the form of a collapsed tube. The greater curvature in the erect position approximately reached the level of the umbilicus. When the stomach was partially filled with a standard bismuth meal half a pint in volume, its body was almost uniform in diameter, its axis corresponding in position with that of the empty organ. The diameter of the pyloric vestibule became slightly smaller as it approached the pyloric canal, which was always closed, except when chyme was passing through it, although its cavity was generally expanded in post-mortem specimens. In the vertical position the greater curvature reached below the umbilicus and rose about 6 cm. in the horizontal position. The junction between the horizontal and descending portions of the duodenum was fixed, but the pylorus was mobile and was lower in the erect than in the recumbent position. When the stomach was filled with a large meal it expanded chiefly in the direction of the greater curvature, as the intestines offered less resistance than the liver. The left dome of the diaphragm, however, was pushed upwards, so that it lay as high as the right dome. The diameters of the body and the pyloric vestibule were almost uniform, but the pyloric canal remained closed. The pyloric vestibule moved so far over towards the right that it came to lie in front of the pyloric canal, which passed almost directly backwards.

Professor WRIGHT said that the last word on the form of the normal stomach did not rest with the anatomists, as their observations were made on post-mortem subjects, and, further, their specimens were always more or less altered by the preserving agents such as formalin. In his opinion one of the chief points of difference was in reference to the so-called pyloric antrum. To him this always seemed somewhat vague, and he considered that anatomists might very well give that up. Professor Wright paid a very handsome tribute to the work done by radiologists in the investigation of this very difficult problem.

Dr. W. P. GOWLAND (Liverpool) read a note from Professor A. M. PATERSON (Liverpool) who suggested that one factor which was responsible for the very remarkable difference in the form of the stomach as seen in the dissecting-room to-day from that presented years ago was the method of injection and preservation. It was certain that the normal stomach in cases preserved by means of formol or carbolic acid presented a differentiation of parts which was rarely seen in the days when corrosive sublimate was used as the preservative. One was now accustomed to find dilatations and constrictions in the walls of the organ associated with a greater thickness and accumulation of muscular tissue in the one case, and a thinning out of the muscular coat in the other. He showed diagrams of 20 stomachs, taken consecutively from dissecting-room subjects, and made remarks upon them in detail. Physiologically there was little doubt that there were two essential parts of the stomach—the cardia and fundus on the one hand, and the pyloric portion on the other, and he speculated upon the anatomical factors which were engaged in producing the varieties seen. The hour-glass stomach, he added, was obviously not of necessity pathological, and was a form most frequently seen in the dissecting-room.

Professor JOHNSON SYMINGTON (Belfast) was of opinion that the post-mortem changes which took place were, as a rule, much exaggerated, and also that many of the points now brought out had been anticipated some 30 years ago. He showed a specimen where the gas in the digestive organs had been replaced bit by bit by gelatine so as to preserve the actual position of the abdominal contents. The stomach was seen to be bulging forwards to the anterior abdominal wall, and also raised and tilted up by gaseous inflation of the transverse colon and intestines. He considered that radiologists should investigate the lateral view of the stomach more commonly than they did, though he understood that this was, technically, a very difficult procedure.

Dr. H. J. STILES (Edinburgh) considered that the X ray appearances of the stomach should be properly taught to students, and in doing this the differences between the vertical and horizontal positions should be made clear. The latter position was very important to the operating surgeon, and they also had to remember that under the anæsthetic the appearances were very like those seen post mortem. Under the same set of conditions the pyloric canal did not exist, nor did he believe it existed in atony.

Professor A. CAMPBELL GEDDES (Dublin) spoke of the difference in the shape of the abdominal cavity in active males and in females, and how this was sure to influence the shape and position of the contents. In females the stomach was lower down in the abdomen and also in the pelvis quite frequently.

Dr. HERTZ replied.

ELECTRO-THERAPEUTICS.

FRIDAY, JULY 26TH.

President, Mr. C. THURSTAN HOLLAND (Liverpool).

Dr. REGINALD MORTON (London) read a paper on

The X Ray Diagnosis of Some Forms of Arthritis.

While other forms of arthritis were referred to and illustrated, the main object of this paper was to demonstrate the idea that rheumatoid arthritis and osteo-arthritis were two distinct diseases and not different phases of one pathological condition. He believed the joint changes to be due to a chemical substance derived from a micro-organism; that the organism setting up rheumatoid arthritis was different to that causing osteo-arthritis, though he believed it possible to have a mixed infection. In the matter of a differential diagnosis he considered that at the present time the X ray method offered the most reliable and accurate means at our disposal. Rheumatoid arthritis was most common in females and affected a number of the smaller joints, as in the hands, as a rule. The first important change seen radiographically was a narrowing of the normal spaces between the articular ends of the bones, as a result of absorption of the articular cartilages. In osteo-arthritis, while there were serious cartilaginous changes, these were in the nature of fibrillation and disintegration generally, rather than of absorption, with the result that the narrowing of the joint spaces was not nearly so marked, even in cases of comparatively long standing. Erosion of the articular ends of the bones was more common in rheumatoid arthritis than in osteo-arthritis, and speaking generally he considered the latter disease the less destructive of the two, and that there was more effort at repair than in rheumatoid arthritis. The evidence of this was furnished by the absence of rarefaction of the cancellous tissue in osteo-arthritis, the formation of osteophytes tending to support the diseased joint, and the condensation, or eburnation, seen frequently on the articular surfaces as a means of compensating for the loss of the articular cartilage. The formation of osteophytes was not nearly so common in rheumatoid arthritis, and when present they were small and close to the articular border. In osteo-arthritis osteophytes were seen extending well down the shaft of the bone quite commonly. Those sometimes seen at the articular borders of the affected joint were due to the calcification of fragments of disintegrated articular cartilage that had been pushed out by pressure from between the bones—they were most often seen in joints that had to carry much weight, such as the hip and knee. Other points of difference were mentioned, and the paper was fully illustrated with a series of lantern slides.

Peribronchial Phthisis.

Dr. ALFRED C. JORDAN (London) said that in a former account of peribronchial phthisis he had shown that phthisis was, in most cases, a disease of the roots of the lungs in the first instance; not, as ordinarily supposed, of the apices. In the Pathological Museum he was exhibiting a series of skiagrams of 36 "healthy" lungs from the post-mortem room, at ages from 4½ to 72 years which showed that few persons above the age of 6 years escaped calcareous deposit in the lungs. The deposits were large in 25 cases, slight in the

rest; in many there was a large excess of fibrous tissue arranged in thick strands around the larger air-tubes. The calcareous deposits represented obsolete tuberculosis; the fibrous tissue, healed tuberculous bronchopneumonia. Microscopical sections of the hilum shadows in some of these "healthy" lungs could hardly be distinguished from sections of an ordinary case of very chronic phthisis. There were typical tuberculous bronchopneumonic patches with small round cells and large endothelioid plates, extensive tracts of dense fibrous tissue, the calcareous patches already referred to. This might readily account for the fact that a positive tubercle reaction was obtained, by the most delicate test, in 94 per cent. of all children between the ages of 11 and 14, and in most adults. The glands and other structures at the hilum had to deal with a continuous tuberculous invasion throughout life. Those who were unable to cope with the invasion became the subjects of pulmonary tuberculosis. In at least 40 per cent. of cases of phthisis the disease commenced as definite peribronchial mottling. From the hilum the disease spread in all directions. Sooner or later it reached the apex by the ascending bronchioles; extending rapidly there, so that very soon the apex appeared clinically to be the chief seat of the invasion. Very often no physical signs were obtained until the apex had become infected, the disease at the hilum being so deeply placed as to escape detection from without. In about 20 per cent. of cases of phthisis the disease reached the apex very early, and progressed at the apex, while the track of the infection from the root healed, leaving only fibrous tissue around the ascending bronchiole. These were the purely apical cases of phthisis. Under favourable conditions the apical lesion might heal too. This was very well illustrated by a skiagram shown of a healthy man, aged 47, killed by an accident. Healed tuberculous lesions were visible at the hilum and at the left apex; arching strands of fibrous tissue marked the course from the hilum to the apex. These calcareous deposits were easy to demonstrate in the lungs of healthy living persons. The skiagram of a boy of 11 illustrated this. No active tuberculous disease was shown, but there was abundant evidence of old tuberculous infection, which the patient, luckily for himself, had been able to meet by the formation of fibrous tissue around all the principal air-tubes and numerous calcareous deposits along the course of the bronchioles. The boy had shown symptoms from time to time suggestive of phthisis. In a former paper the author stated that "fibroid phthisis," "chronic fibrosis," and "bronchiectasis" were in reality special cases of very chronic peribronchial phthisis, in which much fibrous tissue was formed in the attempt to limit the tuberculous invasion. This had been taken to amount to an assertion that chronic fibrosis was always necessarily due to tuberculosis. He realised that there were exceptions to the rule, as when chronic fibrosis followed on an attack of acute pneumonia in a previously healthy person. In such cases the distribution of the lesions might be found atypical on X ray examination. The fact had long been recognised that physical signs of phthisis might be very hard to find, although the diagnosis was obvious clinically. The explanation of this was that these were cases of peribronchial phthisis. By radiography we could now assess the extent of the disease in all cases. To complete the evidence for peribronchial phthisis so as to satisfy the most exacting critic, a post-mortem examination of a typical case was required. But patients did not die from peribronchial phthisis in the typical stage. At death the whole of both lungs were usually full of tuberculous disease. One might wait years for an early case, previously diagnosed by the X rays, to be killed by accident, and come to post-mortem examination. An imperfect opportunity had arisen, however, in a girl of 12 who died from tuberculous ulceration of the intestines before the disease in the lungs had progressed beyond recognition. Two skiagrams were obtained, two years and two and a half months before death. The first showed definite peribronchial phthisis on the right side, though there were absolutely no physical signs of disease. The second showed well-advanced double peribronchial phthisis; the physical signs were still very slight, variable, and puzzling to the end. A complete series of sections through the whole of each lung (exhibited in the Pathological Museum), hardened in formalin, was cut by Mr. Stephen J. Mitchell. Comparing the sections with the skiagram taken two and a half months previously, every part of the tuberculous lesion was faithfully reproduced in the skiagram, although the disease had advanced considerably (especially on the left side) in the meantime. Thus a well-marked case had been examined pathologically and histologically, and absolute proof offered that an important form of phthisis was that which commenced at the roots. The apex had hitherto been considered to be the starting place of the disease because, firstly, physical signs of phthisis were easily detected at the apex, while at the hilum there was a considerable thickness of healthy lung over it, in the important early stages; secondly, the disease, once extended to the apex, advanced very rapidly in this region, while at the hilum it was far more apt to undergo cure with the formation of calcareous deposits and of fibrous tissue around the air-tubes. The X ray method enabled the disease to be recognised in its early stages wherever the situation of the lesions. The patient could then be placed under appropriate treatment. Finally, the recognition of the nature and meaning of the so-called "normal hilum shadow" rendered the X ray examination of the lungs rational, and cleared up many difficulties of interpretation and diagnosis.

Mr. S. GILBERT SCOTT (London) read a paper on

Cervical Ribs.

He drew a distinction between true and false cervical ribs, though recent investigations tended to show that they were all of the true variety, but in some the extra rib became fused to the transverse process of the seventh cervical vertebra. A "true" cervical rib was one that showed an articulation which gave it at least some freedom of movement. He also described the technique to be observed in conducting the examination.

Dr. C. FRED. BAILEY (Brighton) read a paper on

Stereoscopic Radiography as a Routine Method of Examination.

Dr. Bailey stated that a radiograph pure and simple was merely a mixture of shadows of varying opacity. He mentioned how absence of shadow, or *minus* shadows, could obliterate or modify *plus* shadows. The interpretation of a radiograph, which was in no sense a picture, was simply the result of reasoning. The difficulties in interpreting an ordinary radiograph and the errors into which one might fall were the result of various factors: (1) That every single radiograph was not a picture in the true sense, but rather a series of shadows of differently opaque structures; (2) that these shadows might overlap one another and might diminish or reinforce one another, they might cross one another, or by juxtaposition quite alter one another's characteristics; (3) that their size and definition in relation to the structures which produced them might be profoundly modified by conditions, such as distance from plate or tube and position or composition of the substance itself; and (4) that these shadows were all seen as if on one plane (the ordinary radiograph having length and breadth only), and that it was solely by our judgment that we reasoned out what was the form and size of the object producing the shadow and what was the distance and position of that object itself. The stereoscopic radiograph automatically released our judgment from puzzling itself over the majority of these difficulties, for it gave us a radiograph which, in addition to length and breadth, had thickness or depth, and this was a real and great advantage, for the heterogeneous jumble of shadows and absence of shadows on one plane resolved into something more like the objects which produced them. He believed everybody with two fair eyes could, if he really tried, obtain the stereoscopic effect. He then gave details of a simple method he used for taking stereographs, and showed a perforated card for the observer to view them with, and stated that the cost by his method was practically no greater for stereographs than for ordinary radiographs. He used a lead-guarded frame with a 10×6 opening and took the two stereographs side by side on a 12×10 plate. Various details were given as to how to obtain true binocular perspective in the side-by-side negatives, how the same stereographs could be taken in the upright position, and how used if exposures had to be of one second or less.

Dr. F. HOWARD HUMPHRIS (London) read a paper on

Electricity in the Treatment of Obesity.

Dr. Humphris, after defining obesity, said that chief amongst

the causes was deficient muscular activity, and hence diminished tissue oxidation. He discussed the dangers of obesity, concomitant symptoms, and other evidences of faulty metabolism. In the treatment of obesity he mentioned massage, Turkish baths, light baths, drugs, diet, and electrical treatment, and referred to Bergonié's work during the last 12 years. Treatment was based on the axiom that "the proper use of any organ increases the vitality peculiar to such organ, and also influences the vitality of the entire organisation." The general principle was that of a general exercise of the muscles stimulated thereto by electricity. The current used was a coarse wire faradic, automatically interrupted. Details were given of apparatus required and the technique of administration, the necessity for medical supervision being insisted on. The effects of the current on the weight and on the general health and appearance were mentioned. The rate of weight reduction should be slow, from 2½ to 3½ lb. per week. The beneficial action of this treatment on the heart was pointed out.

Mr. W. HAMPSON (London) read a paper on

The Control of Rapid and Irregular Heart Beats by the Electrical Stimulation of Muscles.

He said that the large muscles of the body (back, abdomen, thighs, and calves) were stimulated to make brief contractions simultaneously at short intervals by a faradic current distributed to the muscles and interrupted rhythmically. The contractions expelled blood and lymph in the direction permitted by the valves—viz., towards the heart, and so produced rhythmical pulsations of fluid pressure. The pulsations were arranged to occur with a frequency slightly less than that of the heart beat. The stimulation of the heart due to the pressure pulsation in the large veins influenced the heart in such a way that its beats presently synchronised with the contractions of the muscles, which thus became secondary hearts. The contractions were then slowed a little more and the heart beats shortly afterwards synchronised again at the slower rate. By this means the circulation, and with it the general health, was much improved, while the heart was relieved of work. Breathing was rendered less distressful, and a feeling of rest and well-being, frequently with sleep, supervened and lasted for several hours. In time the improved action of the heart became habitual, and dilatation became markedly diminished. The treatment had been adopted as a substitute for the Nauheim course.

DISEASES OF CHILDREN (INCLUDING ORTHOPÆDICS).

FRIDAY, JULY 26TH.

President, Mr. ROBERT JONES (Liverpool).

Mr. G. C. E. SIMPSON (Liverpool) and Mr. N. DUNN (Liverpool) communicated a paper on

Spasmodic Contraction of the Peroneal Muscles in Flat Foot.

Spasm of the peronei, they said, was recognised as a complication of flat foot, but no detailed description was given in the text-books. About 40 cases yearly were operated on in Mr. Robert Jones's clinic: 60 per cent. occurred in males, 90 per cent. before the age of 20, and trauma was a factor in one-third. Early cases resembled simple flat foot, but the peroneal contraction prevented inversion. In later cases the feet were rigid and simulated osseous flat foot, but under an anæsthetic the deformity could be rectified readily. In the worst cases osseous changes were superimposed. A series of typical cases was described. These cases were resistant to mechanical treatment unless combined with operative procedures, and on this account special attention should be directed to peroneal flat foot by classifying it apart from static flat foot.

Mr. T. R. W. ARMOUR (Liverpool) and Mr. DUNN (Liverpool) communicated a paper on

Operative and Post-Operative Treatment of Spasmodic Flat Foot.

In treating peroneal flat foot, they said it was necessary to put the peroneal muscles out of action until the arch of the foot had been restored and strengthened. This might be done by exsection of a portion of the peroneal tendons by open operation as suggested by Mr. Robert Jones; after operation the foot was forcibly inverted and kept inverted for six weeks. In seven recent cases the writers had exposed and crushed the peroneal nerve. The advantage of this operation was that voluntary inversion was possible immediately, and the patient could walk next day. Peroneal function returned in about six weeks, and the results had been exceedingly favourable. In obstinate cases transplantation of the peroneus longus to the inner side of the foot to aid inversion gave excellent results. After correction of deformity by wrenching, the tendon was tenotomised on the cuboid; it was then drawn out of an incision above the malleolus and passed to an incision over the scaphoid, through a tunnel in the tissues across the front of the ankle. The tendon was sutured to the scaphoid by buried sutures. The peroneus brevis must be divided. Inversion was kept up for a long time to ensure a good and firm attachment. After all these operations it was necessary for the patient to wear some support to the arch; the Thomas boot, raised on the inner side with an outside iron, was the best apparatus. Massage and exercises and a proper system of standing and walking were indispensable. Some cases associated with bowed tibiæ were particularly obstinate and apt to relapse; in two of these it had been necessary to remodel the arch by tarsectomy.

Professor M. JANSEN (Leyden) read a paper on

Physiological Scoliosis.

He said that the human spine tended to deflect to the right in the mid-dorsal region, to the left in the upper dorsal and dorsilumbar regions. This tendency was the same in different races and must be due to physiological causes—asymmetry of function or of structure. Analysis of cases showed four combinations of curves with marked asymmetry of [redacted]: (1) left low dorsal; (2) left low dorsal with [redacted]; (3) left low dorsal with right mid-dorsal [redacted]; and (4) left total scoliosis were very [redacted] the reverse conditions. The left low [redacted] constant factor, and must be th[redacted] asymmetrical physiological causes [redacted] great asymmetrical muscle and [redacted] right crus sent a large bundle [redacted] larger part of the rest of the fib[redacted] to be distributed to the left side [redacted] left half of the diaphragm move[redacted] right, as was shown by the grea[redacted] the left side in rickets, and by ex[redacted] dorsal curve during inspiration [redacted] asymmetry caused a tendency to [redacted] Left high dorsal and right mid-dorsa[redacted] effects due to its action and to differ[redacted] pressures. In school years an element of [redacted] added, and the degree of summation dep[redacted] motility of the spine; gravity further accentuated deflection. Young children should not be allowed to sit before they could stand and walk. At first they should be kept on the abdomen and back; then they should crawl. Finally, they should repeat developmental history and attain the erect attitude from all fours. The strengthened muscles would then be sufficient to prevent the development of scoliosis.

Mr. J. S. KELLETT SMITH (Eastbourne) read a paper on

Some Principles of the Treatment of Lateral Curvature of the Spine by Exercise.

He said that lateral curvature was due to muscular weakness and the curative value of exercises was very great, whether alone or aided by apparatus. Exercises on all fours best overcame the deformity and fixity of the spine and were used first. In crawling exercises moving forward the right arm and leg together gave right dorsal and left lumbar scoliosis, while right arm and left leg together gave left total scoliosis. Combinations of movements were chosen to overcome the deformity, the corrective movement being made forcibly. Later other exercises were commenced to strengthen the spine: the trunk or arms were moved while a corrective strain was kept on the spine. Whether on the back or abdomen or in the erect posture all exercises must be performed with a level pelvis. Other primary principles were avoidance of muscular fatigue and of strain from work or study. Reading and rest must be carried out in a good prone position.

Dr. A. MUMFORD (Manchester) and Mr. R. C. ELMSLIE (London) made a few remarks on these two papers on scoliosis, to which Professor JANSEN and Mr. KELLETT SMITH briefly replied.

Mr. G. H. EDINGTON (Glasgow) read a paper on an

Unusual Malformation of the Anus in an Infant.

This occurred in a male infant two days old. Though a little meconium had been noticed the anal depression was shallow and had no communication with the bowel. The rectum terminated close to the anus, and from it a narrow fistulous track led forward to an opening at the base of the scrotum, from which a little meconium had apparently escaped. The fistula lay close under the perineal raphe, which formed a ridge; no sphincter ani was present. The deformity was apparently due to faulty union of the lateral genital folds; a small canal was left with an opening at the anterior end of the proctodeal depression.

Dr. C. PAGET LAPAGE (Manchester) read a paper on

Tuberculous Disease and Tuberculous Infection in Infancy and Childhood.

He said that to obtain a clear conception of the frequency of tuberculous infection it was necessary to distinguish cases in which the disease was active from those in which it had been shut off and overcome by the tissues. At the Children's Hospital one half of all cases examined post mortem showed macroscopic evidences of tuberculosis in the abdominal or thoracic glands; the disease appeared to spread from gland to gland. Cutaneous tuberculin tests gave results in close correlation to the pathological findings and appeared to be specific; in acute febrile diseases and very active and advancing tuberculosis a negative result was unreliable. 25 per cent. of all children gave a positive reaction, many in the absence of history, symptoms, or signs of tuberculous infection; the frequency was greater as the child got older. X ray examinations confirmed the other figures. Definite lesions of the mediastinal glands or roots of the lungs were found in more than half of the 120 cases examined; only eight showed apical involvement. The X rays showed positive infection in 26 cases where physical examination was negative and in 56 where it was doubtful. Tuberculous infection was almost universal in the children in large towns; the cases often could not be diagnosed clinically; in many instances the disease became localised and cured in early childhood without any suspicion arising at any period of its course. Notification of all cases with positive cutaneous reaction would overwhelm the departments of public health.

Mr. W. S. HAUGHTON (Dublin), in a paper on

A Recent Case of the Lorenz Operation, Demonstrating by X Rays the Development of the Acetabulum,

said that the development of any structure was largely determined by functional use. This might be demonstrated by X ray examination in such conditions as the curves of rickets and the repair of fractures. Lime salts were laid down in definite mechanical systems in response to the stimuli of functional use. These principles were recognised in Lorenz's treatment of congenital dislocation, measures being taken to encourage functional use after reduction, and in this way to obtain development of the joint. Skiagrams were shown illustrating the progressive development of the bones after the Lorenz operation under the influence of function. Deposit of new bone was seen, particularly in the lips and floor of the acetabulum and the head and neck of the femur. Normal conditions were approached in about a year.

Professor JANSEN discussed the true nature and cause of the lamellæ of bones.

Mr. R. C. ELMSLIE (London) read a paper on

Fibrous and Fibrocystic Osteitis.

He said that too little attention had been given to the diagnosis and treatment of cysts of the long bones. Their pathology was intimately connected with that of fibrous osteitis, and they might distinguish:—(1) localised fibrous osteitis; (2) localised fibrocystic osteitis; (3) general fibrocystic osteitis (von Recklinghausen); and (4) cystic osteitis (with or without lining membrane). Degeneration cysts from sarcomata, myxomata, &c., and hydatids also occurred in bones. Spontaneous fracture was usually the first symptom of cystic osteitis; swelling or deformity from bending appeared first in fibrous osteitis. The differential diagnosis was often difficult, especially from endosteal tumours and a central abscess—as a rule it was possible without exploration, by consideration of the following characteristics. In cystic disease there were (1) no alteration in the length of the bone, and (2) absence of pain or swelling, perfect function (till fracture occurs), and absence of muscular wasting. The skiagram showed a cavity evenly in the centre of the bone, undivided by trabeculæ with no sclerosis of surrounding bone; there was no periostitis and the shell of bone was unbroken. In fibrocystic disease the skiagram showed evident expansion of the bone; the area was subdivided by trabeculæ and sharply delimited. Both conditions stopped short of the epiphysial line. Certain similarities of these two lesions suggested a common pathology; the cysts might arise from liquefaction of a patch of osteitis, or the cyst might become partly organised and trabeculæ develop after trauma. Five cases were described, with radiographs at different stages, one of which supported the latter hypothesis. Treatment should be conservative; curettage and crushing in the cyst wall led to functional cure. Subperiosteal resection was also advocated by some for complete cure. In fibrocystic disease the cases showed that the deformity might be advantageously corrected by osteoclasis or osteotomy.

Dr. F. C. EVE (Hull) described

A System of Printed Anamnesis Questions for Children Out-patients

intended to economise time in out-patient work. The nurse obtained the brief answers required to the series of important questions, and the slip was of assistance to the physician and ensured a complete history of the case for future reference. A paper of instructions for the mothers further expedited proceedings. The table occupied about 30 lines, and there were special subdivisions for infants and mouth-breathers.

STATE MEDICINE.

FRIDAY, JULY 26TH.

President, Dr. ARCHIBALD KERR CHALMERS (Glasgow).

The PRESIDENT entered a protest against the growing tendency to regard the work of preventive medicine as resulting only in flooding the population with inefficients. He could conceive no more grotesque or inaccurate description of the actual position. In his opinion the whole movement had been a forward one and the future was full of hope. With regard to school medical inspection, he thought this was probably to too great an extent pathological rather than physiological in its objective. It was a valuable contribution to knowledge to ascertain in what proportion our children were handicapped physically, but we should reach higher levels if we endeavoured to group the mental equipment of the children, especially of those who were above the average, and he hoped that school medical inspectors and teachers would combine to this end.

A short discussion on

Children and Dental Diseases

was opened by Dr. R. J. ERSKINE YOUNG (Liverpool), who stated that it was only in 1907 that the deplorable dental condition of the poorer classes of society had been realised by certain municipal authorities. In that year the Liverpool Education Committee started the dental clinic at Hightown, to which the speaker was appointed dental surgeon. This clinic was equipped with a view to economy and efficiency. The teeth of all the children, about 1000, attending the day industrial schools were first examined, between 40 and 50 in a morning, and this was continued thrice weekly for a fortnight. Actual treatment was of the simplest nature, owing to the necessity for economy. It largely consisted of cement and amalgam fillings, and, when necessary, of extractions. Viewing the clinic from the parents' standpoint, Dr. Young remarked that from his practical experience of both medicine and dentistry he considered dental patients as a whole, in all classes of society, to be too often both unreasonable and ungrateful. From the children's point of view his great object was, by avoiding pain and using tact, to gain their confidence. He always used local anæsthetics for extractions, drilling, and removal of nerves. He would like to mention, in passing, a dentifrice which he had found most useful, called aphrodent. This was made by Savory and Moore, had a high carbolic acid coefficiency, and was rapidly lethal to bacillus coli, Klebs Löffler, and pneumococcus. In a few years the general public would realise that the dental surgeon of to-day was a specialist in the same sense as the aural or ophthalmic surgeon, and that to save the teeth and lives of the children was the alpha and

the causes was deficient muscular activity, and hence diminished tissue oxidation. He discussed the dangers of obesity, concomitant symptoms, and other evidences of faulty metabolism. In the treatment of obesity he mentioned massage, Turkish baths, light baths, drugs, diet, and electrical treatment, and referred to Bergonié's work during the last 12 years. Treatment was based on the axiom that "the proper use of any organ increases the vitality peculiar to such organ, and also influences the vitality of the entire organisation." The general principle was that of a general exercise of the muscles stimulated thereto by electricity. The current used was a coarse wire faradic, automatically interrupted. Details were given of apparatus required and the technique of administration, the necessity for medical supervision being insisted on. The effects of the current on the weight and on the general health and appearance were mentioned. The rate of weight reduction should be slow, from 2½ to 3½ lb. per week. The beneficial action of this treatment on the heart was pointed out.

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Mr. T. R. W. ARMOUR (Liverpool) and Mr. DUNN (Liverpool) communicated a paper on

Operative and Post-Operative Treatment of Spasmodic Flat Foot.

In treating peroneal flat foot, they said it was necessary to put the peroneal muscles out of action until the arch of the foot had been restored and strengthened. This might be done by exsection of a portion of the peroneal tendons by open operation as suggested by Mr. Robert Jones; after operation the foot was forcibly inverted and kept inverted for six weeks. In seven recent cases the writers had exposed and crushed the peroneal nerve. The advantage of this operation was that voluntary inversion was possible immediately, and the patient could walk next day. Peroneal function returned in about six weeks, and the results had been exceedingly favourable. In obstinate cases transplantation of the peroneus longus to the inner side of the foot to aid inversion gave excellent results. After correction of deformity by wrenching, the tendon was tenotomised on the cuboid; it was then drawn out of an incision above the malleolus and passed to an incision over the scaphoid, through a tunnel in the tissues across the front of the ankle. The tendon was sutured to the scaphoid by buried sutures. The peroneus brevis must be divided. Inversion was kept up for a long time to ensure a good and firm attachment. After all these operations it was necessary for the patient to wear some support to the arch; the Thomas boot, raised on the inner side with an outside iron, was the best apparatus. Massage and exercises and a proper system of standing and walking were indispensable. Some cases associated with bowed tibiæ were particularly obstinate and apt to relapse; in two of these it had been necessary to remodel the arch by tarsectomy.

Professor M. JANSEN (Leyden) read a paper on

Physiological Scoliosis.

He said that the human spine tended to deflect to the right in the mid-dorsal region, to the left in the upper dorsal and dorsilumbar regions. This tendency was the same in different races and must be due to physiological causes—asymmetry of function or of structure. Analysis of cases showed four combinations of curves with marked asymmetry of statistics: (1) left low dorsal; (2) left low dorsal with right mid-dorsal; (3) left low dorsal with right mid-dorsal and left high dorsal; and (4) left total scoliosis were very much commoner than the reverse conditions. The left low dorsal was the common constant factor, and must be the primary curve due to asymmetrical physiological causes. The diaphragm was the great asymmetrical muscle and constantly in action. The right crus sent a large bundle to the left crus, and the larger part of the rest of the fibres had recently been shown to be distributed to the left side of the mesial plane. The left half of the diaphragm moved with greater force than the right, as was shown by the greater depth of the sulcus on the left side in rickets, and by exaggeration of the left low dorsal curve during inspiration in scoliosis cases. This asymmetry caused a tendency to a left low dorsal curve. Left high dorsal and right mid-dorsal curves were secondary effects due to its action and to difference of intrathoracic pressures. In school years an element of left total curve was added, and the degree of summation depended on the motility of the spine; gravity further accentuated deflection. Young children should not be allowed to sit before they could stand and walk. At first they should be kept on the abdomen and back; then they should crawl. Finally, they should repeat developmental history and attain the erect attitude from all fours. The strengthened muscles would then be sufficient to prevent the development of scoliosis.

Mr. J. S. KELLETT SMITH (Eastbourne) read a paper on

Some Principles of the Treatment of Lateral Curvature of the Spine by Exercise.

He said that lateral curvature was due to muscular weakness and the curative value of exercises was very great, whether alone or aided by apparatus. Exercises on all fours best overcame the deformity and fixity of the spine and were used first. In crawling exercises moving forward the right arm and leg together gave right dorsal and left lumbar scoliosis, while right arm and left leg together gave left total scoliosis. Combinations of movements were chosen to overcome the deformity, the corrective movement being made forcibly. Later other exercises were commenced to strengthen the spine: the trunk or arms were moved while a corrective strain was kept on the spine. Whether on the back or abdomen or in the erect posture all exercises must be performed with a level pelvis. Other primary principles were avoidance of muscular fatigue and of strain from work or study. Reading and rest must be carried out in a good prone position.

Dr. A. MUMFORD (Manchester) and Mr. R. C. ELMSLIE (London) made a few remarks on these two papers on scoliosis, to which Professor JANSEN and Mr. KELLETT SMITH briefly replied.

Mr. G. H. EDINGTON (Glasgow) read a paper on an

Unusual Malformation of the Anus in an Infant.

This occurred in a male infant two days old. Though a little meconium had been noticed the anal depression was shallow and had no communication with the bowel. The rectum terminated close to the anus, and from it a narrow fistulous track led forward to an opening at the base of the scrotum, from which a little meconium had apparently escaped. The fistula lay close under the perineal raphe, which formed a ridge; no sphincter ani was present. The deformity was apparently due to faulty union of the lateral genital folds; a small canal was left with an opening at the anterior end of the proctodeal depression.

Dr. C. PAGET LAPAGE (Manchester) read a paper on

Tuberculous Disease and Tuberculous Infection in Infancy and Childhood.

He said that to obtain a clear conception of the frequency of tuberculous infection it was necessary to distinguish cases in which the disease was active from those in which it had been shut off and overcome by the tissues. At the Children's Hospital one half of all cases examined post mortem showed macroscopic evidences of tuberculosis in the abdominal or thoracic glands; the disease appeared to spread from gland to gland. Cutaneous tuberculin tests gave results in close correlation to the pathological findings and appeared to be specific; in acute febrile diseases and very active and advancing tuberculosis a negative result was unreliable. 25 per cent. of all children gave a positive reaction, many in the absence of history, symptoms, or signs of tuberculous infection; the frequency was greater as the child got older. X ray examinations confirmed the other figures. Definite lesions of the mediastinal glands or roots of the lungs were found in more than half of the 120 cases examined; only eight showed apical involvement. The X rays showed positive infection in 26 cases where physical examination was negative and in 56 where it was doubtful. Tuberculous infection was almost universal in the children in large towns and the cases often could not be diagnosed clinically; in many instances the disease became localised and cured in later childhood without any suspicion arising at any period of its course. Notification of all cases with positive cutaneous reaction would overwhelm the departments of public health.

Mr. W. S. HAUGHTON (Dublin), in a paper on

A Recent Case of the Lorenz Operation, Demonstrating by X Rays the Development of the Acetabulum,

said that the development of any structure was largely determined by functional use. This might be demonstrated by X ray examination in such conditions as the curves of rickets and the repair of fractures. Lime salts were laid down in definite mechanical systems in response to the stimuli of functional use. These principles were recognised in Lorenz's treatment of congenital dislocation, measures being taken to encourage functional use after reduction, and in this way to obtain development of the joint. Skiagrams were shown illustrating the progressive development of the bones after the Lorenz operation under the influence of function. Deposit of new bone was seen, particularly in the lips and floor of the acetabulum and the head and neck of the femur. Normal conditions were approached in about a year.

Professor JANSEN discussed the true nature and cause of the lamellæ of bones.

Mr. R. C. ELMSLIE (London) read a paper on

Fibrous and Fibrocystic Osteitis.

He said that too little attention had been given to the diagnosis and treatment of cysts of the long bones. Their pathology was intimately connected with that of fibrous osteitis, and they might distinguish:—(1) localised fibrous osteitis; (2) localised fibrocystic osteitis; (3) general fibrocystic osteitis (von Recklinghausen); and (4) cystic osteitis (with or without lining membrane). Degeneration cysts from sarcomata, myxomata, &c., and hydatids also occurred in bones. Spontaneous fracture was usually the first symptom of cystic osteitis; swelling or deformity from bending appeared first in fibrous osteitis. The differential diagnosis was often difficult, especially from endosteal tumours and a central abscess—as a rule it was possible without exploration, by consideration of the following characteristics. In cystic disease there were (1) no alteration in the length of the bone, and (2) absence of pain or swelling, perfect function (till fracture occurs), and absence of muscular wasting. The skiagram showed a cavity evenly in the centre of the bone, undivided by trabeculæ with no sclerosis of surrounding bone; there was no periostitis and the shell of bone was unbroken. In fibrocystic disease the skiagram showed evident expansion of the bone; the area was subdivided by trabeculæ and sharply delimited. Both conditions stopped short of the epiphysial line. Certain similarities of these two lesions suggested a common pathology; the cysts might arise from liquefaction of a patch of osteitis, or the cyst might become partly organised and trabeculæ develop after trauma. Five cases were described, with radiographs at different stages, one of which supported the latter hypothesis. Treatment should be conservative; curettage and crushing in the cyst wall led to functional cure. Subperiosteal resection was also advocated by some for complete cure. In fibrocystic disease the cases showed that the deformity might be advantageously corrected by osteoclasis or osteotomy.

Dr. F. C. EVE (Hull) described

A System of Printed Anamnesis Questions for Children Out-patients

intended to economise time in out-patient work. The nurse obtained the brief answers required to the series of important questions, and the slip was of assistance to the physician and ensured a complete history of the case for future reference. A paper of instructions for the mothers further expedited proceedings. The table occupied about 30 lines, and there were special subdivisions for infants and mouth-breathers.

STATE MEDICINE.

FRIDAY, JULY 26TH.

President, Dr. ARCHIBALD KERR CHALMERS (Glasgow).

The PRESIDENT entered a protest against the growing tendency to regard the work of preventive medicine as resulting only in flooding the population with inefficients. He could conceive no more grotesque or inaccurate description of the actual position. In his opinion the whole movement had been a forward one and the future was full of hope. With regard to school medical inspection, he thought this was probably to too great an extent pathological rather than physiological in its objective. It was a valuable contribution to knowledge to ascertain in what proportion our children were handicapped physically, but we should reach higher levels if we endeavoured to group the mental equipment of the children, especially of those who were above the average, and he hoped that school medical inspectors and teachers would combine to this end.

A short discussion on

Children and Dental Diseases

was opened by Dr. R. J. ERSKINE YOUNG (Liverpool), who stated that it was only in 1907 that the deplorable dental condition of the poorer classes of society had been realised by certain municipal authorities. In that year the Liverpool Education Committee started the dental clinic at Hightown, to which the speaker was appointed dental surgeon. This clinic was equipped with a view to economy and efficiency. The teeth of all the children, about 1000, attending the day industrial schools were first examined, between 40 and 50 in a morning, and this was continued thrice weekly for a fortnight. Actual treatment was of the simplest nature, owing to the necessity for economy. It largely consisted of cement and amalgam fillings, and, when necessary, of extractions. Viewing the clinic from the parents' standpoint, Dr. Young remarked that from his practical experience of both medicine and dentistry he considered dental patients as a whole, in all classes of society, to be too often both unreasonable and ungrateful. From the children's point of view his great object was, by avoiding pain and using tact, to gain their confidence. He always used local anæsthetics for extractions, drilling, and removal of nerves. He would like to mention, in passing, a dentifrice which he had found most useful, called aphrodent. This was made by Savory and Moore, had a high carbolic acid coefficiency, and was rapidly lethal to bacillus coli, Klebs Löffler, and pneumococcus. In a few years the general public would realise that the dental surgeon of to-day was a specialist in the same sense as the aural or ophthalmic surgeon, and that to save the teeth and lives of the children was the alpha and

omega of all dental clinics. In his opinion tuberculosis could be, and was, contracted through diseased teeth, and consequently for every cavity filled, for every septic tooth extracted, they had struck a blow against possible tuberculosis. He would like to see dental clinics established in sufficient numbers in their large towns, not only to cure dental disease, but to prevent the diseases resulting from it.

Dr. J. SIM WALLACE (London) pointed out that many different diseases, ranging from dento-alveolar abscess to cancer of the tongue, might result directly from diseased teeth, while those resulting indirectly knew no limits. Dental diseases also frequently interfered with normal development. Modern methods of preventing decay in teeth were based on a knowledge of the etiology of the disease, which had been thoroughly studied and elucidated by the dental profession; but as a result of a disastrous omission from the medical curriculum, medical students were still kept in the most profound ignorance of the subject. It was now known that dental caries resulted from the undue lodgment of plaques of micro-organisms, together with fermentable carbohydrates, when the acid formed thereby was protected from the action of the saliva by the impermeability of the mass. A new principle in dietetics followed from this—viz., that the food should be of such a nature or the meals so arranged that the mouth was left physiologically clean after eating. All animals in a state of nature had their teeth kept free from disease in this way, and hygienic methods of feeding were welcomed by nine-tenths of both parents and children, and were it not for erroneous teaching two-thirds of the diseases of the teeth would rapidly vanish. The speaker then referred to two of the main factors in the causation of dental diseases. 1. The pappy nature of the food which very young children were so frequently compelled to subsist upon. The soaking of bread in milk, however, cost more than the very poor could afford, and moreover the preparation of the pap was more troublesome than simply giving a young child a piece of bread to eat. 2. Dr. James Wheatley, medical officer of health for Salop, had pointed out that the eating of sweets was responsible for 50 per cent. of decayed teeth at the present day. It was said that sugar was a cheap and excellent food for the poor. The poor were unable to buy beef, mutton, and other albuminous foods, and were compelled to get the protein they required from bread, thus getting a surfeit of carbohydrates if they obtained sufficient protein. What was so often wanting in their diet was sufficient protein, fat, and fresh vegetable juices, all of which were very helpful in preventing caries of the teeth. It would be difficult to prevent children eating sweets so long as the doctrine of the value of sugar in diet was promulgated, and so long as children were brought up on pap. Children brought up on what might be called the physiological system had not any marked liking for sugar, but rather for fish, flesh, fruit, and fat. With regard to the treatment of dental disease in children, to deal with this efficiently would require an expenditure of some £7,000,000 in three years, and unless modern preventive measures were taken 75 per cent. of children would require re-treatment at the end of one year. If adequate funds were not forthcoming, that was no reason for doing nothing. Rather, medical officers of health should vigorously undertake the campaign for the prevention of dental disease in children, which could be done without expense.

Dr. J. J. BUCHAN (St. Helens) was not prepared wholly to accept all Dr. Wallace's conclusions, but thought they were justified in endeavouring to educate the public as to the danger of soft food-stuffs.

Dr. J. S. MACKINTOSH (London) thought that the amount of dental disease was due to the change in our national habits as to food.

Dr. F. E. WYNNE (Wigan) considered that dental caries was brought down to the underlying cause of all disease—namely, poverty. He would like to have suggestions as to how medical officers of health were to improve the diet of the poor, and instanced the impossibility of getting slum mothers to give the right kind of food to their children. The greatest measure for the public health would be a general increase of wages all round.

The PRESIDENT, in closing the discussion, remarked on the danger of artificially prepared foods. He thought they ought to cease writing up the food value of sugar.

A discussion on

Isolation in Scarlet Fever

was opened by Dr. C. H. PHILLIPS (Hanley), who dealt with the subject under three heads: (1) whether hospitals, as at present constituted, were the most suitable buildings for dealing with the disease; (2) whether the period of isolation adopted at present was too long; and (3) as to the advisability of adopting more open-air treatment in scarlet fever. He pointed out that isolation hospitals had been in existence for over 30 years, but the results expected from them had not been obtained. In his opinion they would prove a failure so long as patients were massed in large wards, and until classification and segregation of different diseases were adopted. To carry out effectually this individual isolation would involve a large initial outlay, but the saving on the cost of maintenance and the shorter stay in hospital would compensate. As to the second point, he believed that in all mild and uncomplicated cases (i.e., those having no discharge) four weeks' detention in hospital was quite long enough, and waiting till desquamation had ceased was unnecessary. He had obtained opinions on this point from the superintendents of 27 isolation hospitals in Great Britain, and the large majority concurred in his belief that too much importance had been attached in the past to desquamation as a source of infection, only six hospitals still professing belief in desquamation infection. The most pronounced opinion was that of Dr. R. Milne, of Barnardo's Homes, who did not isolate fever cases in any way, but kept them side by side with serious operation cases in the general wards of his hospital, relying entirely on swabbing the throat with 10 per cent. carbolic oil and rubbing the body all over with pure eucalyptus oil. The writings of other medical men were quoted to show the change of opinion which had taken place in recent years as to the infectivity of desquamation. Dr. Phillips's third point was a plea for more outdoor treatment of cases of scarlet fever after three weeks of isolation when there were no complications.

Dr. CLAUDE RUNDLE (Fazakerley) dwelt on the importance of treating infectious diseases aseptically.[1] During the last two and a half years he had treated 900 cases at Fazakerley, and had had only two cases of cross infection, both scarlet fever. He treated various kinds of infectious disease in the same ward. His method of treatment necessitated a very high quality of trained nursing, which could not be expected from a mother nursing her child at home. He quite agreed with Dr. Phillips as to fresh-air treatment, and was in the habit of treating scarlet fever cases in a similar way to tuberculous cases. He did not believe in Dr. Milne's home treatment, nor did he subscribe to the opinion that the isolation of scarlet fever had proved an absolute failure.

Mr. JOHN MULVANY (Portsmouth) did not believe in extending the accommodation for scarlet fever patients, and suggested that fully 40 per cent. of cases could be treated as well at home. He would reserve isolation hospitals for the children of the poor.

Dr. J. M. DAY (Dublin) pointed out that as the poison of scarlet fever in 99 per cent. of cases entered by the throat and developed there, the patient was not free from infection till the throat was quite healthy again. He recommended the removal of enlarged tonsils in convalescent cases before discharge, otherwise he would not guarantee the patient to be free from infection. He was strongly in favour of convalescent homes in the country. "Return" cases were often due in his opinion to mild cases not sent in to hospital and to clothes put away and not disinfected till the child was ready to leave hospital. No child should be discharged direct from a scarlet fever ward unless isolation were possible at home.

The PRESIDENT thought the aseptic method of treating scarlet fever could be carried out in most private houses, and that treatment was apparently successful whether one agreed with Dr. Milne or with Dr. Rundle. He thought it was an error on the part of the Local Government Board to lay too much emphasis on the provision of cubic space in isolation hospitals. He would prefer plenty of floor space round the beds. He himself regarded desquamation as at least a potential source of infection in scarlet fever.

Mr. A. A. BRADBURNE (Manchester), in a paper on

The Management of Visual Defects in Children under the Medical Inspection Act,

said that the management of eye cases under the Act should

[1] THE LANCET, March 16th, 1912, p. 720.

be limited to detection of common ailments and errors of vision, and only under very special and limited circumstances should attempts at their rectification be asked for or permitted. He had considerable experience of the difficulty of prescribing glasses in the course of school rounds owing to unsuitable premises and surroundings, and thought it should be undertaken only in places at a distance from a special hospital, and that if undertaken a special room at specified hours with leisure to work should always be insisted on. Tests dependent on the ability to read letters or symbols were of little value when unsupported by other corroborative means. If this test was used the letters should be printed on clean white non-reflecting paper and framed and glazed for cleanliness. To prevent memorising the board should be reversible, with another set of letters on the opposite side, and provided with its own illuminant, so that the light standard should be a constant one. But this test passed over without detection cases of incipient short sight. There was no better method of effective visual inspection than that of skiascopy, which detected at once short sight, spasm of accommodation, astigmatism, and the faceted cornea, for which glasses were usually useless. By this means want of parallelism of the optic axes, such as occurred in squint, and latent divergence or convergence could also be detected. After the nature of the refraction had been ascertained by the mirror test the question would arise as to what standard of vision justified them in not ordering glasses. This would depend on the status of the child. For the labouring classes a standard of vision as low as 6/12 might be allowed to pass unglassed provided the case was not one of short sight, but if the child aspired to a clerkship or similar calling the standard should be raised to at least 6/6 in one eye and 6/9 in the other. In astigmatism it was advisable to correct all cases in which the axis in one or both eyes was oblique or when it varied in direction in either eye, or was present in only one eye, owing to the strain which oblique astigmatism made on the obliques in the interests of binocular vision. Some parents objected to their children wearing glasses, but the law in such cases ought to be enforced for the children's advantage.

The concluding paper in this section was read by Dr. MACKINTOSH, on

The Effect of Intramigration on National Health.

By intramigration he meant migratory movements of the population within the confines of the British Isles. In the isolated community of St. Kilda it was noted that despite close in-breeding the inhabitants enjoyed good health, doubtless due to the elimination of unsuitable types and specialisation of those surviving. These people bore migration badly unless into conditions approximating those in which they were evolved. From the county of Sussex migrants came, chiefly as domestic servants, into the north-west district of London. Of these, two distinct types had been noted—a tallish, slender, blue or grey-eyed type, from the villages in the chalky coastal strip, and a short, thick-set brunette type from the Weald, with its heavy clay soil. The latter throve when she changed the Wealden clay for the London clay, and indoor life suited her, and if she married her children were usually healthy; whereas the blonde type was apt to suffer in health, because she migrated from permeable chalk to clay and required an open-air life, and her children were apt to develop catarrhs and other ailments and to be of weak physique. The explanation of these phenomena was that in the one case there were far greater demands on the adaptive powers than in the other. Evidence was not wanting that the Wealden girl was just as liable to fail in health if exposed to an analogous degree of changed environment. These experiences were typical of what was taking place all over the country under the ægis of modern industrialism—viz., the disintegration of old-established rural communities and their reassemblage in cities or dispersal about the country. As a result of these migrations of what were formerly fixed communities much visible degeneration had taken place, but this was largely somatic rather than germ plasmic in character—i.e., with restoration of a suitable environment regeneration would result. The deterioration of national physique which had taken place despite the various measures directed to the improvement of national health was to be ascribed to our change from an agricultural to a manufacturing nation, and the rapid alteration of environment of the working classes that ensued. The centrifugal movement now setting in after the centripetal attraction of the city might help to solve the problem, but if the cry "back to the land" was to come to practical issues due discernment must be exercised or fresh troubles would arise from people being planted on the wrong land.

ANÆSTHETICS.

FRIDAY, JULY 26TH.

President, Dr. DUDLEY W. BUXTON (London).

Mr. F. W. BAILEY (Liverpool) opened a discussion on

Employment of Alkaloidal Bodies Prior to Inhalation, Infusion, or Subdural Injection with a View to Abrogating Deleterious After-effects.

After a brief description of the physiological action of these drugs, Mr. Bailey expressed his personal preference for morphia and atropine, favouring small doses. There was always a possibility of poisonous effects. The susceptibility of many persons to opium and belladonna was well known. Children were particularly susceptible to morphia, and only atropine should be given to them. The advantages of a previous injection of alkaloids were an economy in the anæsthetic used, quiet anæsthesia, diminution or abolition of salivation, thus lessening the tendency to post-operative complications, and diminution of pain, excitement, and vomiting after operation. The exhibition of alkaloids previous to spinal analgesia calmed nervous subjects. On the other hand, these alkaloids sometimes produced little or no effect, and were harmful in patients with rigid chest walls or suffering from bronchitis or kidney trouble, also where the respiratory centre was from any cause already depressed. He did not think they helped to produce muscular relaxation. The dose should never be pushed with the idea of securing complete narcosis before administering the anæsthetic. He suggested in the ordinary way the following doses: morphia, gr. 1/4th; atropine, gr. 1/100th; scopolamine, gr. 1/100th. The drugs were best administered from half to three-quarters of an hour before the time fixed for operation.

Mr. G. S. HETT (London) approached the subject more particularly from the point of view of a nasal and throat surgeon. In all his operations some alkaloid, if it were only the application of cocaine, had to be used before operation. In operations on the sinuses and submucous resections under local anæsthesia he advocated the previous injection of alkaloids. Their use avoided mental depression during the operation and what he termed traumatic neurasthenia, which was apt to follow. He liked the nasal packing and the injection of alkaloids to be done at the same time and on the operating table, and frequently on his arrival to operate he found the patient asleep. He had never seen respiratory failure from their employment. They were a great help in the administration of ether by the intravenous method. Atropine he regarded rather as an aid to the throat surgeon than as a narcotic; it prevented laryngeal spasm and cardiac inhibition, and was useful in operations on tonsils and adenoids, in which operations he considered scopomorphine contra-indicated.

Dr. G. A. H. BARTON (London) said he had for some years past used scopolamine and morphine injections as a preliminary to general anæsthesia, more especially in conjunction with open ether. He had used atropine also occasionally where no narcotic effect was required. An hour before the operation was the best time for administration. The dosage was difficult; for each patient there was an appropriate dose which could rarely be ascertained beforehand. He had not usually exceeded 1/4th gr. of morphia and 1/100th gr. of scopolamine; one ought to err on the side of safety. The condition of patients on arriving in the operating theatre was variable. The induction of anæsthesia was generally hastened and rendered more pleasant, and its type marked by increased relaxation with absence of minor respiratory complications and retching, even with very light anæsthesia; the amount of anæsthetic required was diminished and shock abrogated. Since using these alkaloids he had found a great many more cases come within the range of open ether. After operation patients generally slept, but not too heavily, and their reflexes were brisk. There was seldom any vomiting on awakening. In no cases had deleterious effects been observed. The only contra-indications were the extremes of life, great feebleness,

nephritis, advanced lung disease, and operations involving hæmorrhage into the upper air passages. He had not used omnopon, and considered the administration of all the alkaloids of opium inadvisable.

Dr. VICTOR G. L. FIELDEN (Belfast) regarded the use of cocaine in ophthalmic, nasal, and throat surgery as of great service. Morphine, scopolamine, and atropine alone or combined he considered also of great service in a large proportion of cases. Some patients could not bear morphia and suffered from vomiting, and the difficulty was that one could not recognise beforehand such a patient when he presented himself.

Dr. W. J. MCCARDIE (Birmingham) said the combination of scopolamine and morphine with an anæsthetic lessened the dose of all three drugs needed, so the total toxic effect of anæsthesia was diminished. The dryness of mucous membranes produced was valuable in the prevention of after-effects. Too much morphia was often given. His standard dose was 1/8th gr., combined with 1/200th gr. of scopolamine; he sometimes gave a combination of hyoscine and strychnine, which calmed the nervous system while stimulating respiration. He did not give the alkaloids to patients under 16 or over 60. He was of opinion that morphia did cause more oozing of blood during operation.

Mr. C. CARTER BRAINE (London) said that, on the whole, he had been favourably impressed with the previous injection of atropine, morphine, and scopolamine. In his practice he had not used more than 1/6th gr. morphine, and considered that there was a tendency to give too much. It was very difficult to recognise the difference between anæsthesia and slumber when these alkaloidal bodies were used, and this was fully recognised when teaching students to administer anæsthetics; they were extremely liable to permit the patient to pass from anæsthesia to sleep, and in the absence of all eye signs wherewith to rectify this error it was difficult to point out when this change was taking place. The anæsthetist should always be informed when any of these alkaloids had been injected prior to his advent. In some instances he had thought that the action of morphine had been increased by the anæsthetic, and asked if any of his colleagues had met with similar experience.

Dr. A. BERESFORD KINGSFORD (London) said he disliked the use of cocaine in conjunction with chloroform, because of the great depression often produced. He thought the use of scopomorphine a merciful way of commencing the anæsthesia when the patient was nervous, but the effects varied greatly. Some were very sleepy, others wide awake, but all seemed comfortable. The preliminary injection by no means always seemed to lessen the amount of ether used; sometimes one had even to fall back on chloroform for a time in order to get complete abdominal relaxation. Then there was a tendency to cyanosis, and when oxygen was given freely sometimes arrest of respiration took place, which was inconvenient though never alarming. He, too, had experienced difficulty sometimes in demonstrating the signs of anæsthesia to students on account of the sluggishness of the pupils, &c., in these cases.

Mr. W. FINGLAND (Liverpool) deprecated any preliminary injection of alkaloids.

The PRESIDENT regarded the method as of great value; it lessened the amount of anæsthetic required and minimised the after-effects. It was of great use in the nervous type of patient that was still to be found in London, if not in Liverpool. The post-operative sleep obtained was an asset for the patient. He insisted on the importance of absolute quietude for the patient during the interval between injection and anæsthetisation. He did not agree that the combined action of the alkaloids was greater than the sum of their individual actions. On the contrary, they worked together in some directions, but were antagonistic as regarded their deleterious effects.

Mr. BAILEY replied.

Dr. A. G. LEVY (London) read a paper on

A Cardiac Reaction of Adrenalin in Chloroformed Subjects.

He said that adrenalin stimulated the terminations of the augmentor nerves of the heart as well as those of the vasoconstrictor nerves, and this cardiac action served, in conjunction with chloroform, to determine the onset of gross irregularities. It was chiefly in the lighter degrees of chloroform anæsthesia that these irregularities were made manifest, and under such conditions alone were the consequences serious. If half a minim of 1 in 1000 adrenalin solution were injected into a vein of a cat under the influence of less than 1 per cent. chloroform vapour, the heart-beat became accelerated and irregular, and in the great majority of instances this irregularity terminated in fibrillation of the ventricles. With the onset of fibrillation the blood pressure fell with startling suddenness to zero, and in sequence to this the respirations ceased after a brief period of deep gasping breathing caused by the depletion of the respiratory centre of blood. Generally this heart failure was permanent and the animal died, but occasionally recovery, temporary or complete, had been observed. Dr. Levy adduced evidence to show that this reaction occurred also in man, often with fatal results. A number of accidents had followed the injection of adrenalin into the nasal septum, the anæsthetic conditions in nasal operations being peculiarly favourable for the production of the adrenalin effect. The question of absorption from mucous membranes was discussed, as also was the question of individual susceptibility; some of these cases reacted to extremely small doses, and, possibly for this reason, the proportion of recoveries was far higher than in the cat. A case was also quoted to show how an immediately fatal result might follow the injection of a minute quantity of adrenalin for the treatment of shock after operation. The conclusion arrived at from the experimental investigation was that the injection of adrenalin was safe in animals (1) not under any general anæsthetic; (2) under ether; or (3) under deep chloroform anæsthesia. In patients under light chloroform anæsthesia the intravenous or submucous injection of adrenalin involved a risk which was unjustifiable. Finally, it was interesting to note that heart failure from ventricular fibrillation had not hitherto been substantiated in the human subject.

The PRESIDENT congratulated Dr. Levy on his investigation, which threw considerable light on the reported cases of collapse following the injection of adrenalin into anæsthetised subjects.

Dr. MCCARDIE had dreaded the injection of adrenalin under deep rather than under light anæsthesia, and had made a practice of allowing patients almost to come to, just previous to, or for a short time after, the injection; he had never had any trouble since he adopted this precaution.

Dr. A. EHRENFRIED (Boston, U.S.A.) said that in America adrenalin was not often injected into the nasal mucosa during operations thereon.

Dr. LEVY, in replying, expressed surprise that Dr. McCardie's experience was totally opposed to physiological experience, which showed definitely that it was only under very light chloroform anæsthesia that this cardiac effect occurred. He considered that Dr. McCardie had been fortunate.

Mr. RAYMOND E. APPERLY (London) read a paper on

The Effect of Ether and Chloroform on the Liver and Kidneys in Health and in Certain Infections.

He said that fatal cases of acidosis were very few compared with total administrations; milder cases were, however, fairly frequent, but often not differentiated from other toxic conditions. Acetonuria was an indication of an interference with the normal functions of the liver, particularly the metabolism of fat. The amount of acetone in the urine was no criterion of the amount of damage done to the liver; it was often in inverse proportion to this, and depended more on the eliminating abilities of the kidneys. In a first series of experiments on healthy rabbits chloroform or ether was injected subcutaneously, and the livers and kidneys were examined on their death, if that resulted, or otherwise on killing them at different dates after the injections. In those injected with ether effects on these organs were absent or slight, whereas in those injected with chloroform fatty degeneration of liver was present in all and necrosis in most, and the kidneys for the most part showed fatty degeneration. In a second series in which the anæsthetics were administered by inhalation the same results were observed, except that necrosis of liver after chloroform was not so marked. In a third series various septic organisms were injected intraperitoneally, and in four subjects of this experiment chloroform was injected on the following day as well. Of these four, three died on the second day and one was killed on the third; all but one of them showed necrosis of the liver. In the entire series there were fatty or granular or cloudy changes in both liver and kidneys. In a fourth series 10 rabbits were injected with 1 c.c. of

chloroform, five having been fed the day previously with glucose. All showed fatty degeneration of liver and kidneys except two of the glucose-fed rabbits whose kidneys were not affected, but whereas none of the glucose-fed rabbits died, or even appeared ill, as a result of the experiment, three of the others died and two were extremely ill. The inferences he drew were that chloroform caused more damage than ether to the liver and kidneys, and that previous glucose-feeding was valuable in preventing the worst effects. Some minor points had also been brought out—viz., that there was no difference in the action of the three varieties of chloroform, and that a few minutes of deep anæsthesia did more harm than an hour's light anæsthesia.

The PRESIDENT pointed out that there were many factors, clinical and experimental, which interfered with the conclusions drawn; rabbits were particularly liable to these fatty changes, and in addition were easily asphyxiated during anæsthesia; cats or dogs would have been better subjects. He thought caution necessary before adopting *in toto* the results of this investigation to clinical work. He asked if the rabbits were wild, and if so, how long they had been in captivity, and whether any change in their diet or routine of life had shortly preceded the experiments.

Dr. LEVY said that the inhalation experiments were valuable, but he also thought that other animals might have been used.

Dr. EHRENFRIED said some research on similar lines had been conducted in America, where, however, owing to the more general use of ether, acidosis was rare.

Dr. MCCARDIE said that clinically there seemed to be four varieties of delayed chloroform poisoning: the ordinary type, especially frequent in the young; acute yellow atrophy of liver, frequent in the puerperium; the hæmorrhagic variety with destruction of blood in the liver and kidneys; and cases in which there was suppression of urine. He asked if Mr. Apperly had noticed anything corresponding to this in his researches. He dreaded the remote action of chloroform as much or more than its immediate dangers.

Mr. APPERLY, in replying, said that there was always acetonuria after anæsthesia and it was more marked after ether, because acetone excretion was more rapid than after chloroform. The rabbits were wild ones which had been in captivity for a long time previous to the experiments and no recent alteration in their life routine had taken place; some had been used as controls and in them the organs did not show the changes exhibited by those experimented upon.

The PRESIDENT then closed the proceedings.

OPHTHALMOLOGY.

FRIDAY, JULY 26TH.

President, Mr. EDGAR A. BROWNE (Liverpool).

A discussion on

The Use of Salvarsan in Diseases of the Eye

was opened by Mr. SYDNEY STEPHENSON (London), who said that most were agreed that the best mode of administering salvarsan was by intravenous injection. As regarded dosage, their aim should be not so much to relieve the local symptoms as to cure the underlying disorder. At least two or three maximum doses should be administered at intervals of a few days. Some of the poor results attributed to the drug were probably the result of inadequate dosage, for some had held that small doses resulted in the production of resistant strains of spirochætæ. In the use of the drug there should be frequent determination of the Wassermann reaction, quantitative as well as qualitative. It had been shown that the administration of salvarsan did not prevent the appearance of new syphilitic symptoms during the period of administration, just as was the case with mercury; this was due to the presence of "nests" of organisms, which escaped the action of the initial dose. Experience showed that tertiary symptoms appeared earlier after the use of the drug than under ordinary treatment, and to some extent it could be said that the type of syphilis was altered by the new treatment. These appearances were most frequent after the use of small doses of salvarsan, and pointed to inefficient treatment. There was a strong tendency to the use of mercury conjointly with and after the injection of salvarsan, with the object of preventing these late symptoms. General symptoms, seen after the injection of the drug, such as pyrexia, insomnia, sweating, nausea, headache, restlessness, and so forth, were probably the effect of faulty administration rather than of the salvarsan. It was of the utmost importance that the solvent should be freshly distilled water. In eye disease particularly it was of the first importance to prevent local reaction, or the delicate tissue of the eye might be further damaged; such reactions were commoner when insufficient doses were employed. Recently it had been shown that salvarsan was contra-indicated in severe vascular lesions of the eye with a tendency to hæmorrhage. The influence of the drug on the optic nerve was of the first importance to ophthalmic surgeons. Ehrlich had shown in his long list of collected cases that only one case of nerve defect had been found; later workers had averred there was danger to the nerve; but the balance of opinion was distinctly in favour of the drug's innocuous character as regarded the healthy optic nerve, and also that it could be administered safely and with great advantage in syphilitic affection of the nerve. Ehrlich's observations were now two years old. There was no unanimity of opinion as to the curative effect of the new product in ocular disease. At most it appeared to offer one more antisyphilitic remedy, the exact place of which was as yet uncertain. In interstitial keratitis of inherited syphilis, for which mercury was well-nigh useless, salvarsan had on the whole given no better results. A few surgeons reported good results, but the majority thought the malady little influenced by it. The relief of photophobia was fairly generally attributed to it. Those who claimed good result from its use were accustomed to give several injections. An interstitial keratitis of acquired syphilis was readily relieved by it, but so it was by mercury. As a rule, iridocyclitis of secondary syphilis responded well to the drug and much more quickly than it did to mercury; improvement was usually found the day after the injection. It appeared that when properly given salvarsan presented no particular danger to the body or to the eye; it was most likely to be useful in primary and secondary manifestations, particularly of conditions affecting the uveal tract, but it was well to combine it with mercury.

Dr. J. IGERSHEIMER (Halle) recounted a series of experiments which he had performed on small mammals to determine the toxicity of the drug. One symptom he found affecting the optic nerve fibres of cats; there was definite reaction of degeneration by Marchi's method, but the degeneration followed only chronic poisoning. There was no evidence of such untoward effects in man. In recent syphilitic affection of the optic nerve salvarsan had a very favourable effect. The drug was least useful in interstitial keratitis, but in his hands there had been distinct improvement in quite a number of cases when two or three injections were given—not cures, but a favourable influence on the course of the disease. Further, in these inherited cases he found that salvarsan had greater influence in varying the Wassermann reaction than mercury had. Beneficial results had been obtained in paralyses of ocular muscles of syphilitic origin, particularly to gross paralyses due to gumma of the orbit pressing on the nerves. He had had some experience of neosalvarsan, which had the distinct advantage of being easily soluble. Its toxic effect upon cats was greater than that of salvarsan. When injected experimentally into the cornea of rabbits the clouding produced speedily cleared up. Subconjunctival injection, however, tended to produce necrosis. Used in syphilitic patients it appeared to cause some transient mental symptoms, but it exerted a distinctly more favourable influence on interstitial keratitis than salvarsan did.

Dr. W. B. MARPLE (New York) preferred to reserve his considered opinion of the value of the new drug until after the dust of premature observations was removed from the medical atmosphere. He had used salvarsan in interstitial keratitis and gummatous or papular iritis. In the keratitis, although the Wassermann reaction became negative, no effect was observed in the ocular condition except possibly a slight diminution of photophobia. In iritis the effect of the injection was extraordinarily rapid and complete, more so than could be obtained by other methods.

Mr. A. MAITLAND RAMSAY (Glasgow) said he had used salvarsan in 22 cases of eye disease due to syphilis; 2 were chronic cases, 5 congenital, and the remainder acquired disease. Primary chancre of the eyelid responded to the treatment with remarkable rapidity, so also did late

syphilitic ulceration of the conjunctiva. Scleritis showed no improvement; 1 case of kerato-iritis improved considerably. Five cases of iritis responded well, one with magical rapidity. Five cases of choroiditis showed improvement, particularly when the lesion was recent. As regarded dangerous effects of the drug upon the optic nerve, he was inclined to think that cases reported were due to the continued activity of insufficiently treated syphilis rather than to any noxious influence of the drug. In conclusion, he recommended the conjoint use of mercury and of the most approved local measures.

Mr. S. H. BROWNING (London) dealt with the use of salvarsan in sympathetic ophthalmitis. Continued observations of the blood in cases of this disease had shown a distinct increase in the number of large mononuclear leucocytes, even to 30 or 40 per cent. of the white cells. This was typical of the blood of patients suffering from protozoal infections. The deduction was that this fell disease might be due to such a protozoal infection, and therefore amenable to treatment by salvarsan. He detailed the case of a boy treated upon this hypothesis with three injections of salvarsan. The results were excellent and distinctly warranted the extended trial of the drug for this intractable disease.

Mr. BISHOP HARMAN (London) said he was in the fortunate position of being able to overlook the work of his colleague in a general hospital where salvarsan had been extensively used. It was their custom to prepare the patient as for a major operation, to give average doses, and two or three injections at intervals of a week. So far he had not seen any deleterious effects upon the optic nerve, and cases he had watched where it was used for cerebral syphilis with optic neuritis had benefited considerably, but in one case there had been a sharp relapse. In eye disease he had not been able to find any advantage in its use in interstitial keratitis, even when used in three injections in a most recent and acutely vascular case. Again it had failed in rapidly advancing chorio-retinitis, but so also had mercury. He acknowledged its beneficial influence in acute iritis, but did not advise it in such ocular conditions as were readily amenable to other and completely harmless measures. The case was, of course, different where other and general symptoms of the disease existed. In acute cyclitis with rapidly increasing vitreous opacities and in syphilitic optic neuritis its use was warranted, for rapidity in treatment was essential. In cases of lesser severity it should be given only when the risks had been fully explained to the patient, for there were risks; he had seen serious ocular paralyses follow immediately on the injection, and there were known cases of inexplicable and sudden fatal result, even when the administration was in perfectly competent hands.

Dr. A. NIMMO WALKER (Liverpool) said he also had observed the use of the drug by his surgical colleagues, and had watched four cases of unsatisfactory results following its use. In one case interstitial keratitis, and in another gummatous iritis, occurred after the injections, showing that they had been unsuccessful. Two others, a papillitis and an acute retrobulbar neuritis with myelomalacia, had followed the injections, but it was possible that these effects were due to the syphilis rather than to the drug.

Dr. W. B. INGLIS POLLOCK (Glasgow) added a word of caution. It was within their memory that the disastrous effects of other arsenical compounds upon the optic nerve and the production of blindness had not been observed until these drugs had been in use for some time. It was two years before the first of these cases had been noted, and in a short time 200 cases had been put on record.

Dr. A. L. WHITEHEAD (Leeds) sent a summary of the cases treated by him—interstitial keratitis, 37; syphilitic iritis, 22; and retinitis, 1. The Wassermann reaction was positive in all. In acute iritis the results were striking and gratifying, as also in the retinitis. In interstitial keratitis only two showed any detectable improvement; in three monocular cases the other eye became affected after the injections.

Dr. J. JAMESON EVANS (Birmingham) said he had used salvarsan in a few cases with good results, including one case of interstitial keratitis with marked photophobia and trigeminal neuralgia, which had resisted other treatment. He had found that general disturbance was not absent after the injection of neosalvarsan, even when administered in the most exact manner.

Dr. F. A. POCKLEY (Sydney, N.S.W.) detailed a case showing the extraordinary rapidity with which gross and complicated iritis due to an accidentally acquired syphilis in a colleague had been reduced by the injection of this drug, yet death followed later from other syphilitic symptoms. He had found no benefit from its use in interstitial keratitis. No ill-effects had followed its use in his patients, but in a neighbouring hospital a patient had died suddenly after an injection.

Mr. SYDNEY STEPHENSON, in replying, urged that no evidence was forthcoming that salvarsan had any deleterious effect on the optic nerve, and insisted that it was unjustifiable to condemn it as useless in interstitial keratitis upon the failure of single injections.

Dr. INGLIS POLLOCK read a paper on

Intra-ocular Hæmorrhage.

Retinal hæmorrhage, he said, such as occurred in vascular disease was dangerous to vision only when it occurred at the macula; even then there was possibility of absorption. Post-operative hæmorrhage was particularly lamentable. It always occurred in the choroid. These eyes were a total loss, and little could be done to anticipate such accidents. Certain recurrent hyaloid hæmorrhages were common in young people, especially males, though some appeared in females as vicarious menstruation. Constipation and gout were predisposing factors. Such hæmorrhages probably came from the veins.

Mr. CLAUD A. WORTH (London) said that he had recently seen a case of recurrent hyaloid hæmorrhage as vicarious menstruation in which treatment had been of no avail. The patient had ultimately become blind. In another patient the attacks had been stopped by the regular use of iodide of potassium.

Dr. H. EALES (Birmingham) mentioned a singular case occurring in a patient brought up as a female, but who proved at adolescence to be a male. The hæmorrhages were most frequent in young males of from 15 to 25 years of age, and appeared due to a peculiar vasomotor condition. In some there had been concurrent tuberculous disease.

Dr. J. GRAY CLEGG (Manchester) had had several such cases. The coagulability of the blood had been investigated where there was no evidence of tubercle. In one case there was evidence that it was below normal, and calcium lactate had been of service.

Dr. IGERSHEIMER said that tubercle was a distinct etiological factor in these cases, and the use of tuberculin had proved valuable in one such case.

Mr. A. A. BRADBURNE (Manchester) gave an account of an

Investigation into the Relation of Ocular Imbalance and Auditory Affections.

Hunter, Fleurens, and Purkinje, he said, had noticed ocular effects in disturbance of the body balance, facts that were established by Goltz. Later it was shown that these disturbances were due to excitation of the semicircular canals. Body balance was so intimately connected with binocular vision and the sensations of the auditory canals that it was not unreasonable to anticipate ocular symptoms in disease of these canals. He had investigated seven cases of labyrinthine disease, and in all but two the vertical meridians of one or both eyes tended to lean outwards at the upper end. In the two exceptions the proof of the ear disease was not sure. In cases of temporo-sphenoidal abscess there had been found a disturbance of the horizontal levels of the eyes. In a number of post-operative cases of ear disease he had found similar defects; the vertical meridians were at fault in six, and the elevation in five. Allowing for the possibility of ocular imbalance antedating the ear disease in some, yet the frequency of the finding of eye defect seemed to point to a causal connexion.

Mr. CLAUD WORTH and Dr. A. HILL GRIFFITH (Manchester) discussed conditions allied to those noted by the author, and Mr. CHARLES GEORGE LEE (Liverpool) suggested that visual influences in the production of sea-sickness had connexion with the phenomenon noted by Mr. Bradburne.

Dr. JAMESON EVANS (Birmingham) gave a demonstration of

The Optophone,

an instrument devised by Mr. D'Alby, of Birmingham, which

rendered light radiations audible to the ear. It was a selenium photometer, the sensitive plate being set in the circuit of an electric battery, so that variations in the condition of the plate by light varied the current and caused it to work a sounding ratchet. The rate and strength of the sound indicated variations in the light appreciable by blind people. At present, he said, it was toy, but it had possibilities.

At the Liverpool Eye and Ear Infirmary clinical cases were shown by Dr. EDGAR STEVENSON (Liverpool), and at the St. Paul's Eye Hospital Mr. BISHOP HARMAN gave a demonstration of his new operation of Subconjunctival Reefing and Advancement for Squint; and Dr. NIMMO WALKER of the operation of keratotomy as practised there for corneal ulcers.

TROPICAL MEDICINE.

FRIDAY, JULY 26TH.

President, Professor JOHN L. TODD (Montreal).

This session was mainly devoted to a discussion upon Sanitation of Agricultural Estates in the Tropics. It was opened by the Secretary, Dr. B. BLACKLOCK, who read a paper prepared for the meeting by Dr. MALCOLM WATSON (Federated Malay States) on

Sanitation of Agricultural Estates in Malaya.

It was pointed out that the rapid development of the rubber industry and the opening out of so many estates in Malaya had created a new problem. Large numbers of coolies from India and elsewhere were now being brought to the Malayan Peninsula to carry on the work in the plantations, each estate having not only to provide houses for the labourers but also all the necessary sanitary arrangements. In advising the managers of these estates upon sanitary matters it was necessary in each instance to consider the local conditions and requirements. The financial aspects of the question could not be ignored, for in some cases there were only small funds available for carrying out the proposed schemes. Still it was well to remember that the health and lives of the coolies were often at stake, and the duty of the medical officer was to accept his responsibility and to advise what he regarded as absolutely needful protective measures. Before pressing his policy upon estate authorities it was necessary to take into consideration all the factors in the case. The object of the measures should in all instances be thoroughly explained to the managers and to those who had to find the money. Sanitary progress in the tropics was usually attained, he said, only after a hard fight. The diplomatic medical officer would generally, at first at all events, conduct his operations along the lines of least resistance. Dr. Watson described the conditions in Malaya as to water-supply, housing, excrement disposal, &c., and showed how malaria had been already greatly reduced by anti-mosquito measures. It was absolutely necessary that broken bottles and other rubbish in which mosquitoes could breed should be removed from water channels and destroyed. Quinine alone could not be trusted to prevent the ravages of malaria, though its use, along with the carrying out of anti-mosquito measures, was to be recommended. Pure water-supplies for estates were difficult to obtain in Malaya. Most of the sources were unreliable, and water from them had to be boiled. There should be no filtration after boiling. On most estates inadequate attention was given to the disposal of refuse, and this was always a source of danger. Some 80 or 90 per cent. of the coolie population suffered from parasitic worms, but this did not give rise to much mortality. Ankylostomiasis was present in some plantations. Unfortunately the use of latrines was often refused by Indian coolies, sometimes for reasons of caste, and sometimes owing to the general dislike of the Indian to use a common latrine. As a rule defæcation in the open fields was preferred, and in this way there was danger of the spread of ankylostomiasis. The best latrine, in Dr. Watson's opinion, was a shallow trench, the excrement being covered with earth twice a day. Within recent years the study of tropical diseases and the increased knowledge as to causation of these maladies had done much to improve the health of both whites and coloured people, and the death-rate had been largely reduced. Dr. Watson's paper was illustrated by a number of lantern slides.

The remarks of Dr. W. CARNEGIE BROWN (London) on

Sanitation of Agricultural Estates in the Tropics

were read in his unavoidable absence by the Secretary. Dr. Brown had read Dr. Watson's paper and considered it a valuable contribution to the literature of sanitation in the tropics. It had to be remembered that local governments and estate owners had sometimes been led into serious difficulties by mistaken advice given by their medical officers, who had disregarded finance in framing their sanitary schemes. Some estates had little money with which to carry out idealistic proposals, and the measures proposed should always be practicable in the circumstances. Water-supply was a first necessity, and when it came from a suspicious source it should always be boiled before use. It might be possible to set up an apparatus for sterilising water on a large scale, but any such apparatus should be simple, easily worked, and should deal with water directly without previous treatment. Malaria caused great economic loss to many planters, and the disease played great havoc with the health of coolies. He advised the employment of native mosquito brigades to keep water channels free from obstruction. As the main source of malaria infection was derived from native children, he advised the systematic administration of quinine in native schools. Those who suffered from malaria should continue to take quinine for six months after the attack. Adult natives generally protected themselves from mosquito bites by wrapping themselves up at night in a sleeping cloth. Dr. Brown then discussed the subject of excrement disposal in the tropics, and also referred to the dietaries of the coloured labourers. In this connexion he pointed out how many of the previous difficulties of estate managers had been removed, instancing the recent researches in the etiology of beri-beri, which had killed thousands of coolies and incapacitated thousands of others. The fact that by avoiding the use of over-milled rice as a staple article of diet beri-beri could be prevented, had relieved estate managers from great losses, and lightened the responsibility of the owners.

Dr. W. F. LAW (Demerara) then read a paper on

Sanitation of Estates in British Guiana.

Like the previous speakers, he made reference to finance, but if success was to be expected none but well thought out schemes should be submitted. He dwelt upon the importance of properly constructed dwellings for the coolies, and the necessity for proper ventilation. He advised the raising of the floors above the ground level. Water-supply was often the weakest point upon some estates. He advocated the storage of rain-water in concrete tanks. Water flowing in open channels near the coolie lines was very liable to specific contamination. It was very difficult to get native races to carry out excrement disposal in a proper manner. It always paid estate managers to employ a competent inspector to keep a constant supervision over this and other sanitary arrangements. Malaria had been much reduced in British Guiana by the measures which had been carried out. He advised also daily doses of quinine in malarious localities. The most enlightened and influential estate owners and managers were entirely in accord with Dr. Law and seconded his efforts to prevent disease. Malaria and ankylostomiasis were the two greatest troubles of the coolie labourers, and if by the measures adopted both maladies were prevented the estate authorities would be well rewarded for any additional expense which they had incurred in carrying out the sanitary schemes.

Dr. E. P. MINETT (Demerara) also read a paper which he had prepared in conjunction with his colleague, Dr. K. S. WISE (British Guiana). Sewage and excrement disposal were difficult in the colony, owing partly to the dead-level of the country. It was impossible often to get any fall for pipes or channels. The soil was an impermeable clay, and dealing with excrement by trenching was almost impracticable. If the trenches filled with night soil were covered up the filth remained there unchanged, and was washed out on to the surface of the ground by the first heavy rainfall. Flies and mosquitoes were apt to infest the trenches after rain. On some estates latrines constructed of corrugated iron had been erected over trenches filled with water, and though they were open to objection in various respects they had on the whole served their purpose fairly well. They had an annual rainfall of about 100 to 130 inches, and on some estates water was collected from house-roofs

and stored for consumption. It was sometimes polluted by the droppings of birds. When the storage was in barrels or tubs these receptacles became breeding-places for mosquitoes. Surface water was sometimes collected in trenches or from rivers. It was often of a brown or peaty character, objectionable to taste and sight. It was liable to receive surface impurities washed into it by rain. Attempts to obtain a supply by sinking artesian wells had not been successful, for the water was brackish, very hard, and had an earthy odour. Analyses, chemical and bacteriological, of samples of the various waters were given. Details of housing provision and the means for proper ventilation were then described. Some lantern slides were then shown on the screen.

Lieutenant-Colonel J. K. RITCHIE, R.A.M.C., said that from his own experience he could confirm much of what had been related, especially on the subject of malaria. In addition to the usual anti-malarial measures he advocated the systematic administration of a weekly dose of 15 grains of quinine to all who were exposed to contracting the disease. Care had, however, to be taken to secure that the drug was actually swallowed. The supervision of the quinine administration should not be left to subordinates, but should be carried out under the personal supervision of the medical officer. There were few men in his experience who could not stand a dose of 15 grains, but if there were any who had an idiosyncrasy that did not tolerate the drug he reduced the dose to 10 grains, but in no case did he ever find any who could not stand at least 8 grains, below which dose for prophylactic purposes he never went. As regarded excrement disposal in the tropics, the incineration system in his opinion destroyed valuable manure which should go to the land. Where the soil was suitable he preferred shallow trench-latrines which returned the nitrogen to the soil. It was necessary to have a sufficient amount of land to work upon. It was the insufficiency of land that sometimes caused the failure of the system.

Major S. R. CHRISTOPHERS, I.M.S., emphasised the importance of the economic side of the subject as it affected the coolies. It was notorious that aggregation of population in coolie camps gave rise to special dangers.

Dr. MINETT, in replying, said that in Demerara measures for mosquito reduction were carried out. He deprecated giving so much prominence to quinine prophylaxis. He thought that the plan of giving 5 grains three times a week was better than giving 15 grains once in seven days.

Dr. LAW on this point agreed with Dr. Minett that 5 grains of quinine three times a week were to be preferred to one dose of 15 grains weekly. The combination of anti-mosquito measures and quinine prophylaxis had reduced the amount of malaria by nearly one-half during the last few years.

Captain C. RYLEY, R.A.M.C., thought 5-grain doses of little use as a prophylactic. He related the case of two companies of British soldiers who arrived from England in a tropical dependency and were ordered at once to a malarious district. By arrangement with the officers every officer, non-commissioned officer, and private of the first company received 5 grains of quinine daily for some weeks and the other company no quinine at all. At the end of the experiment 47 per cent. of one company and 49 per cent. of the other had contracted malaria, so that the quinine administered daily in 5-grain doses had made no difference to the result.

Dr. W. T. PROUT (Liverpool) said that work for improvement of the health of a station or estate could not be carried out without the spending of money. He suggested the possibility that in some cases in the past there had been too great timidity in asking for enough money. In his view, if an estate could not afford the funds to protect its employees' health such estate should cease to be worked. Since the discovery of the cause of malaria a great change had come over the views held in respect of sanitation in the tropics. The chief point to be pressed was enforcing all the measures which would prevent the breeding of disease-carrying insects. The larger schemes could be carried out only by the Government, and these included such works as those for public water supply and sewage disposal. The schemes falling to the employers of labour comprised such things as housing and the local disposal of refuse. Other supplementary work could be carried out personally by individuals, and to this end education of all in the elements of hygiene was very desirable. As to quinine, his own experience was in favour of daily doses, as against a single large dose weekly. In the large question of sanitation of our Empire he thought there was necessity for greater coördination. He hoped that ultimately a central bureau would be established to advise the Government on matters of tropical sanitation and to collect information likely to be of value to local governments and their advisers. Such a bureau should be staffed by men who had borne the brunt of the battle as medical officers in the tropics. In his opinion, such an advisory bureau would quicken and facilitate the progress of sanitation in our colonies and dependencies.

The PRESIDENT expressed his satisfaction that those who had taken part in the discussion had been men of great practical experience who had had their share in the fight against disease in the tropics. This was the more important since there were present that day representatives of business houses which had large and important interests in tropical countries, who had come to the meeting for information and to learn how best to protect their employees against the ravages of preventable disease.

Professor F. C. MADDEN (Cairo) then read a paper on

Lymphangioplasty in Elephantiasis of the Leg.

He referred to the various attempts that had been made of late years to devise some method of treating elephantiasis of the leg. In Cairo there were opportunities for trying what could be done by operative procedures, but these had not so far proved satisfactory. Only while the patient remained in the recumbent posture after the operation did improvement persist; but as soon as he got up and walked about the swelling returned as bad as ever. Professor Madden exhibited a number of lantern slides and also handed round some photographs illustrating the state of the tissues in elephantiasis of the leg.

Dr. F. M. SANDWITH (London) discussed the paper, and Professor MADDEN in reply referred to the methods of treatment suggested by Castellani by means of bandaging and massage. Further investigations would be made.

At the close of the proceedings the members of the section, along with the President and other officials, paid a visit to the various departments of the Liverpool School of Tropical Medicine.

BACTERIOLOGY.

FRIDAY, JULY 26TH.

President, Professor JAMES RITCHIE (Edinburgh).

A conjoint paper by Professor E. EMRYS-ROBERTS (Cardiff) and Dr. S. B. WALSH (Merthyr Tydvil) was read by the former entitled

Observations of Brownian Movement, with Special Reference to the Anthrax Spore.

The authors had been led to attempt the elucidation of some points in connexion with Brownian movement in consequence of the observation of one of them that anthrax spores suspended in tap water exhibited practically no movement. In the investigation two controls had been employed which approximated in size to the anthrax spores and exhibited well-marked Brownian movement—the one of living particles, emulsions of staphylococcus pyogenes, and the other of dead particles—Indian ink granules. Observations were made upon time, diluent, and temperature factors, with the result that at the beginning of the experiment and at the end of seven days anthrax spores showed little or no movement (although anthrax bacilli in the suspension exhibited Brownian movement), no matter whether suspended in tap water, normal saline, 4 per cent., 5 per cent., or 10 per cent. formol solution, and whether at room temperature 37° C. or 54° C. The emulsions of staphylococcus pyogenes and Indian ink granules showed well-marked Brownian movement under every condition of experiment. The vital factor had no bearing on the result. Killed emulsions of the staphylococcus and anthrax spores were tested with the same results. Next the authors investigated the weight factor. On making a mixture of equal parts of emulsion of all three sets of particles in tap water, and then centrifugalising, the solid deposit was found to be arranged in three layers. At the bottom a yellow layer of staphylococcus pyogenes, next a white layer of anthrax spores, and above this a black layer of ink granules, thus showing that anthrax spores were intermediate in weight between the staphylococcus pyogenes and the Indian ink granules. Comparative specific gravity

observations confirmed the results obtained by centrifuge. The viscosity factor was investigated by suspending the substances in cedar-wood oil and glycerine on the one hand, which inhibited Brownian movement in all three substances, and in ether on the other hand, in which no appreciable movement could be made out with the spores, whilst the movement of the particles in the two controls was appreciably increased. That comparative immobility was a property possessed by spores in general, and apparently decreased with the resistance of the spores, was suggested by the fact that the spores of tetanus, rauschbrand and subtilis, as compared with anthrax spores exhibited an increasing Brownian movement. Attempts to arrest the movement of the staphylococci and Indian ink granules by passing currents of electricity from zero to two volts through the emulsions completely failed. The generally accepted theory that Brownian movement is based upon unequal differences in surface tension between the particles and the suspensory fluid, was taken by the authors as a reasonable explanation, particularly as it was noted that anthrax spores exhibited no teacup attraction, such as was present in the emulsions of staphylococcus and Indian ink. This suggested that the anthrax spores possessed envelopes so nearly uniform that no unequal differences of surface tension existed, and thus there was no conversion of potential into active energy, such as was presumably the case in the other emulsions, and which resulted in Brownian movement. To test the accuracy of this theory, anthrax spores were treated with 50 per cent. antiformin at 37° C. for 20 minutes, with the result that active Brownian movement was then observed. Treatment with 50 per cent. HCl at 37° C. for 48 hours produced no effect whatever. Hence, it would appear that the well-known disintegrating action of antiformin upon cellular material had so altered the surface of the spores as to produce inequalities sufficient to bring into play the forces leading to the production of Brownian movement.

Captain A. WHITMORE, I.M.S., read a paper on

The Bacteriology of an Infective Disease occurring in Rangoon,

in which he described an infective condition closely resembling infection by bacillus mallei that had come under his notice whilst acting as pathologist at the Rangoon General Hospital. It occurred usually in hypodermic morphia injectors. He met with 38 cases of the disease. On bacteriological examination after death, and in one case during life, the bacillus to be described was invariably isolated from the spleen, heart blood, &c. The macroscopical lesions observed post mortem in the lungs were strikingly similar to those of acute glanders in man. Microscopical examination of preparations from the lesions showed actively motile rod-shaped bacilli, Gram-negative, very similar to B. mallei. Growth upon the usual culture media was rapid and luxuriant. In broth there was a general turbidity and pellicule formation which began early, and by the end of four or five days was a tough, resistant, wrinkled skin. In agar the broth appeared as moist translucent raised colonies which, at 43 hours, became thick and opaque and cream in colour. As time went on the growth became dry and wrinkled, the colour changing to brown with a tinge of pink. On glycerine agar development was very rapid and luxuriant, and formed a thick, wrinkled, and heaped-up growth, not unlike that of the tubercle bacillus. Gelatine was liquefied by the growth of the bacillus. In litmus milk the casein was precipitated and the formation of acid was noted, but no gas had been found in any of the cultures. When inoculated intraperitoneally into the guinea-pig the organism was very pathogenic, death occurring within two or three days from septicæmia with well-marked local lesions, and in the case of the male guinea-pig with the characteristic Strauss's reaction; subcutaneous inoculations and feeding experiments also provoked fatal septicæmia.

Dr. JOHN EYRE (London) confirmed Captain Whitmore's observations so far as concerned certain strains of the bacilli which had been used for inoculation experiments in his laboratory, and emphasised the close resemblance that existed between the naked eye lesions caused by this bacillus and those produced by the glanders bacillus.

The PRESIDENT remarked that many observations on bacterial infections in the tropics were well worth recording, and regretted the paucity of observations dealing with true granulomatous conditions not due either to tubercle or syphilis. He instanced cases of chronic granuloma in the skin, in some of which the conditions closely resembled glanders infection, and which were possibly allied to the cases described by Captain Whitmore.

Captain WHITMORE replied briefly.

Dr. EYRE opened a discussion on

The Standardisation and Control of Vaccines.

He pointed out that Wright's dictum, now more than ten years old, that the best results would be obtained from a system of inoculation when accurate standardisation of vaccines had been secured, applied to therapeutic vaccines as forcibly as it did to prophylactic vaccines, and yet at the present time every pathologist followed a different method in preparing and standardising his vaccines. He expressed his preference for virulent autogenous vaccines, and instanced the results of observations upon the protective powers of antipneumococcic serum to show that all strains of pneumococci were not identical in their biological characters, but that occasionally one could be found against which the serum was powerless, and asserted that this fact made him reluctant to use a stock vaccine when it was possible to prepare an autogenous one. At the same time he agreed with the use of stock vaccines, either as a preliminary step (in order to save time) while an autogenous vaccine was being prepared, or for the entire treatment in those cases where it was not humanly possible to obtain an autogenous one. The real danger if the use of stock vaccines became common was that many therapists with little or no bacteriological training would neglect the prime essential of vaccine therapy—viz., diagnosis—and would use the same vaccine for apparently similar clinical cases which they believed to be due to the same organism. Dr. Eyre reviewed various methods for the preparation and standardisation of bacterial vaccines, pointing out their defects and advantages, and stated that he preferred a virulent autogenous vaccine not more than two generations removed from the human body, cultivated under optimum conditions, suspended in a 0·1 per cent. saline, emulsified by shaking with glass beads in an electrical machine, centrifugalised, if necessary, standardised against normal blood, sterilised by exposure in a water bath of a temperature corresponding to the thermal death point of the organism in question for one hour, dilution to the requisite extent with a 0·25 per cent. tricresol solution, and employed in small doses during its effective period of from three to six months. There were many points upon which vaccine therapeutists might agree to adopt uniform methods, but owing to ignorance of many fundamental facts in bacterial biology he feared the time was not yet ripe for absolute uniformity of procedure.

Dr. J. FREEMAN (London) read a paper on

The Importance of Controlling Vaccine Therapy by Laboratory Tests.

He said that without the demonstration of the production of immunity as the result of an inoculation vaccine therapy was quite irrational; with it it was not only rational but obvious. Thus laboratory tests were the very foundation stones on which vaccine therapy had been built. Also doses given to aid recovery by stimulating the patient's power of immunity were themselves selected and guided by laboratory tests. Proof of the correctness of this guiding was afforded when on looking back on a long series of cases it was obvious that they were deriving benefit from the vaccine. It was not easy to arrange doses by the clinical results without laboratory tests. For instance, whooping-cough without a laboratory test was a comparative failure. Hay fever directly it acquired a laboratory test became a distinct success. Though numberless inoculations had been given without any blood testing, yet all had really received sanction from laboratory testing, sometimes close, sometimes remote. Even those in this country who boasted that they received no light which did not shine from Koch were building, willy nilly, on a foundation of blood testings. Koch himself hailed the agglutination test as an enormous advance, and used it on his patients. He declared that whereas previously he had been inoculating without sufficient guidance, he could for the future get some idea as to what his dose was doing. Just before his death he declared that in his opinion any advance in the use of tuberculin would come from the use of laboratory tests. As there were many obvious problems, all the help that could be obtained in the future would be needed. The fact that

every inoculation of an infected animal tended to provoke an auto-inoculation, and this to provoke another auto-inoculation, and so on, and the fact that different vaccine therapists met these difficulties in different ways and with different doses showed the need for help. Very little assistance could be obtained from the non-specific "results" of treatment, but any real information as to the effect of a dose on immunity would be of great value with all cases. It would be granted that the methods were difficult and expensive, but they were not, as critics alleged, so erratic as to be misleading. Instances might be given that the opsonic index, for example, did really correspond to immunity changes in the blood. The whole question was, when did the changes detected in the blood become so small that they were masked by errors of technique? The opsonic method was a very accurate one, particularly when the results obtained were interpreted by the worker. The meaning of accurate results was often misunderstood. The alternative to judging by laboratory tests was to judge by clinical results; this, though often a help, was quite non-specific in character and therefore might be misleading. This could be shown by the examples quoted by Dr. Freeman.

Dr. L. C. PEEL RITCHIE (Edinburgh) thought that it might be practicable to determine by averaging a minimum immunising dose—i.e., the smallest average dose—which would serve to produce, or demonstrably to increase, the immune substances present in the blood; and he agreed that the general desire to attain to a high degree of efficiency implied the retention of the greatest potential pathogenicity on the part of the organism. To this end he recommended pure cultures from highly virulent infections, without recourse to subcultures, grown upon that medium which gave the most active growth and best conserved the pathogenicity; the employment for the vaccine of a cultivation of that age which contained a maximum number of active organisms, and before the stage of degeneration, involution, or death had developed to any extent; and the employment of that method of sterilisation which involved the least possible disorganisation of the bacterial protoplasm. Athough a qualitative standard was still lacking, the improvement of the quantitative standard should not be neglected. He criticised Wright's method of enumerating a small sample volume in comparison with an equal volume of normal human blood. He had employed for the last six years a gravimetric method similar to that used in the preparation of Koch's tuberculin. His cultivations were incubated upon inspissated serum, the growth washed off with 0·9 per cent. saline, and the emulsion centrifugalised. The deposit consisting solely of bacterial protoplasm, after washing in saline, was transferred to an agate mortar, in which it was dried in an oven or desiccator. The scales which formed were rubbed down into a fine powder with an agate pestle. The whole of the powder was weighed on a decimal balance or stored in a small tube, and any desired quantity weighed out as required and emulsified in saline. Sterilisation was effected usually by the addition of chloroform and toluol, and in rare instances by heat. Dr. Ritchie believed that inoculations of bacterial protoplasm, of whatever variety, produced weight for weight practically similar immunising effects, an observation which had enormously simplified the subject of dosage, so that he used similar doses of, for example, tubercle, staphylococci, or coli in connexion with infections due to those organisms. Consequently it was only the clinical condition, its acuteness or extent, which determined the suitable dose.

Dr. D. W. CARMALT-JONES (London) said that the vital processes involved in immunity were so variable that a large series of observations were necessary before data of value could be obtained by methods such as the estimation of the opsonic index. He regarded the opsonic index as of the highest value in expert hands, but regarded it as too difficult for widespread clinical use. He suggested that macroscopic observations, such as agglutinations and hæmolytic experiments, should be aimed at. He wished to emphasise the importance of clinical observations and accessory clinical treatment in conjunction with the use of vaccines, since vaccines were aimed only at the cause of disease. He noted the wide difference between the doses of tuberculin and other vaccines employed by different observers, partly accounted for in the case of non-tubercular vaccines by differences in the methods of standardising. He quoted Dr. Braxton Hicks's experiments with Sir Almroth Wright's method and that of comparing Gram-positive with Gram-negative organisms, which showed that consistently lower estimates were obtained by Wright's method, perhaps partly accounting for the small doses advocated by Wright's school. He advocated small doses in the treatment of tuberculous affections, and quoted cases of phlyctenular ulceration successfully treated with doses between 1/25,000th and 1/10,000th of bacillary emulsion. He demonstrated a method of preparing vaccines in small quantities, using a modification of Wright's blood capsule for the reception of the vaccine, into which a spiral of platinum wire could be introduced to assist in the breaking up of difficult emulsions. He advised the use of a trace of hydrochloric acid in vaccines of diphtheroid bacilli, and of a trace of sodium hydrate in streptococcal vaccines.

Dr. WILLIAM M. CROFTON (Dublin) said he had found the hæmocytometer method most convenient for standardising. He considered that the opsonin treatment gave, if not uniform, at least comparable results in the hands of any one individual; and, further, that, as usually carried out, it indicated the fluctuations of the thermolabile content of the blood serum, but not of the more specific antibodies. If a dose was sufficient only to keep the opsonic index at its highest point, it was often insufficient to provoke the formation of an adequate amount of antibodies to secure the cure of the patient; therefore, although the index was useful for diagnosis and spacing the dose, it could not be relied upon to indicate the size of the dose that would eventually be necessary.

Dr. W. JAMES WILSON (Belfast) described

A Gravimetric Method of Standardising Vaccines.

The advantages he claimed for the gravimetric method were the following: 1. That with a sensitive balance constant results were obtained. 2. That it was rapid and involved no strain on the eyes. 3. That it could be applied to all cultures of all bacteria growing on solid media, whether these formed uniform emulsions or not. Small clumps vitiated considerably the results in Wright's method, but to a much smaller extent than those obtained in the gravimetric estimation of dosage. 4. That it brought the dosage of bacterio-proteins into line with that of other medical remedies. A method of rapidly drying a bacterial growth smeared on a piece of platinum in a special apparatus was demonstrated. From experience in practice 1/500 mgr. of dried streptococci, 1/300 mgr. of bacillus coli, and 1/100 mgr. of staphylococci were suitable doses. It had been previously shown by Dr. Wilson and Dr. C. Dickson[1] that 1 milligramme of bacteria was represented by 8,000,000,000 of bacillus typhosus, 6,400,000,000 of bacilli coli, 14,000,000,000 of micrococcus melitensis, and 3,000,000,000 of staphylococci and streptococci.

Dr. JOHN CRUICKSHANK (Pollockshields) expressed dissatisfaction with the present attitude of bacteriologists towards vaccine treatment. It appeared to him that before any discussion on standardisation and control of vaccines could be of use a clear idea of the *rationale* of vaccine therapy should be possible. Introduced as a method of treatment for chronic infections, vaccines were now being used in acute infections in which the patients were obviously very ill and suffering severely from the effects of the infecting organisms.

Professor ERNEST E. GLYNN (Liverpool) expressed his preference for standardisation based upon enumeration of the bacteria in a modified Thoma-Zeiss chamber, which gave higher and more accurate results than Wright's method.

Dr. EYRE and Dr. FREEMAN briefly replied.

GYNÆCOLOGY AND OBSTETRICS.

FRIDAY, JULY 26TH.

President, Professor HENRY BRIGGS (Liverpool).

Dr. R. W. JOHNSTONE (Edinburgh) read a paper on

Chorio-angioma of the Placenta.

He said that the specimen he brought forward was the seventy-first recorded example of the condition, excluding placental cysts. The disease was probably more common than the records indicated, since all known cases had been obtained from institutions, and specimens occurring elsewhere were undoubtedly never recognised. The specimen

[1] Journal of Hygiene, vol. xii., 1, 49.

was obtained from a multipara in whom marked hydramnios was present at the eighth month of pregnancy. The tumour at first sight appeared to consist of placental tissue, but closer investigation revealed that it was of a different nature. It occupied a quarter of the placental area and was composed of multiple pedunculated lobules varying in size from that of a pea to that of a small plum. The uterine surface had a greasy or gelatinous appearance, and a faceted condition due to the numerous lobules. Large veins ran to the base of the tumour over the uterine surface. There was little to notice on the fœtal aspect of the placenta beyond an excentric insertion of an otherwise normal umbilical cord. Microscopically all the lobules appeared identical, each exhibiting a covering of chorionic epithelium in which both layers could be traced. The thickness of this covering varied but was never lost. Immediately subjacent to the epithelium was a layer of very delicate connective tissue, the cause of the gelatinous appearance, whence the term "myxoma placentæ." The vessels were in close proximity to this connective tissue layer. They were very numerous, and very fine capillaries, and constituted the bulk of the lobule. The mass of vessels was so great that superficially the lesion appeared to be a hæmorrhage into the connective tissue of a villus. It was possible in all cases, however, to trace the vessel walls. Sections near the junction of healthy tissue and tumour showed no true capsule, but a fibrinous layer, resulting from compressed and degenerated villi. No decidua was noted, and therefore the tissue did not function with the placenta and was a true neoplasm. The pedicle contained large vessels, supported by a core of connective tissue and with a covering of syncytium. The majority of the 70 recorded cases corresponded almost exactly with the specimen described, although many different names had been used—e.g., myxoma-fibrosum placentæ, fibro-myxoma placentæ, &c. The chorionic origin of the tumour might be taken as proved by the two layers of covering epithelium, the stalked arrangement of the lobules, and the thin pedicle. The most probable cause was an abnormal vascularisation of a primitive cotyledon, the result possibly of constriction of the vessels. In the present specimen a direct constriction of the pedicle was present. If this had been produced early it would have caused venous stasis and might have led to stimulation of vascular growth, such as occurred occasionally in the liver if the hepatic veins were ligated. The literature showed that pregnancy and labour in these cases usually followed quite normal lines.

The PRESIDENT agreed that many interesting placental specimens might be lost through oversight. In Liverpool, midwives had instructions to take all unusual specimens to the University museum, and many valuable specimens had been so obtained.

Dr. W. W. CHIPMAN (Montreal) thought that quite a good claim had been made for the angiomatous nature of the tumour. He asked if any vascular disturbances had been noted in the child itself.

Dr. JOHNSTONE replied that there was no record of any alteration in the circulation of the children. They were all quite healthy.

Dr. D. SHANNON (Glasgow) communicated observations and notes upon

Rupture of the Uterus in a Case of Concealed Accidental Hæmorrhage.

The patient, aged 40, was admitted to the Glasgow Maternity Hospital in a collapsed condition, and presented the typical picture of concealed accidental hæmorrhage. Three weeks previously she had felt ill, but her condition had not been considered serious. On the day of admission she was seized with sudden acute abdominal pain and fell to the ground. Her conditon was that rather of profound shock than of internal hæmorrhage. The nine months' pregnant uterus occupied the whole abdomen, was rounded and hard, and the fœtal heart was inaudible. No hæmorrhage had occurred into the vagina. Cæsarean section with subtotal hysterectomy was performed, but the patient never recovered from the shock, and died a few hours after operation. On opening the abdomen the uterus was found ruptured—small multiple tears extending over the peritoneal coat and a larger laceration, two or three inches long, situated between the bladder and uterus. Here and there blood was extravasated in the muscular wall, and there was a small rounded hæmatoma of about the size of an apple near the left cornu. Free blood was also present in the peritoneum. The specimen had unfortunately been lost. Two factors, Dr. Shannon said, must be considered in connexion with the case: (1) The condition of the uterine wall, and (2) the effects produced by the hæmorrhage. In accidental hæmorrhage the uterus was usually abnormal, inasmuch as the fibrous tissue was increased and the muscular elements diminished. The placenta was also possibly the seat of inflammatory change, but the essential lesion undoubtedly lay in the uterine wall. A normal uterine wall was capable of distension, but fibrous tissue would give way, as had occurred in this case. The uterine sinuses were lacerated and the placenta was separated. It was quite possible that the uterine wall was paralysed as a result of the sudden distension. Similar peritoneal lacerations had been noted in cases of volvulus or ovarian cyst into which sudden hæmorrhage had occurred. The blood lost was about two and a half pints, not sufficient to cause death. The condition was quite unlike that seen in placenta prævia, post-partum hæmorrhage, &c., and was undoubtedly due to shock, which might have been produced by interference with the nervous plexuses following on the distension. The treatment of concealed accidental hæmorrhage was always difficult and the majority of the patients died. The first indication was to remove the shock, and this might be done by removing the pressure by rupture of the membranes. In the present case saline was first given, and it did more harm than good. Saline might be given *after* the membranes had been ruptured. It was well to let the patient rest before operation was performed, in order that she might rally from the shock. The trend of modern obstetrical opinion pointed to Cæsarean section, combined with supravaginal hysterectomy as the procedure of choice.

Dr. T. B. GRIMSDALE (Liverpool) quite agreed that any treatment was hopeless in the worst cases of this kind. In his experience saline in accidental hæmorrhage was useless. It certainly should not be given until all vessels had been tied.

Sir JOHN BYERS (Belfast) said that these were the most formidable cases in all obstetrics. If saline was not employed what method could be used to combat the shock? He was entirely opposed to rupture of the membranes in concealed accidental hæmorrhage. The patient would probably bleed to death. He agreed that the primary lesion lay in the uterine wall, and it was difficult to say in any case whether rupture would take place into the peritoneum or into the uterus.

Dr. SHANNON replied that his treatment would depend on whether the patient was in or out of a hospital. If in hospital he would be inclined to rupture the membranes, because, although risky, it was the best means of removing the shock. If out, he would employ morphia and vaginal plugging.

Dr. J. P. HEDLEY (London) read a paper upon

The Excretion of Creatin in Pregnancy and the Toxæmiæ of Pregnancy.

He said that pregnancy gave rise to a considerable increase in the output of creatin, and by the third month the amount was considerable. This fact might possibly be used as a diagnostic early sign of pregnancy. The chief work on this subject had been done by Van Hoogenhayze and Ten Doeschate, but the results that the speaker had obtained differed from those published by these workers. He had examined the urine for creatin in eight cases of normal pregnancy and in nine abnormal cases. Of the former, in two cases the estimation was carried out 14 days before and after delivery; in one case it was made seven days before and after delivery, and in five the investigations were conducted during the third, fourth, and fifth months of pregnancy. In all cases the estimations were made in milligrammes per 10 c.c. of urine. Of the cases at term, the amount of creatin was found to be about 3 mg. After delivery there was a rapid fall to 2·3 or 2·6 mg. At the different months of gestation the results were as follows: At 3 months the amount was 1·1; at 3½ months, 2·2; at 4 months, 1·2; at 4½ months, 1·8; and at 5 months, 2·5. The abnormal cases included three eclamptics, two patients with marked œdema, headache, and albuminuria, three patients with no abnormal clinical symptoms, but whose urine became solid on boiling, and one case of albuminuria due to chronic nephritis. In all the eclamptic cases the amount of creatin excreted was much reduced, and varied between 0·5 and 0·69 mg. before labour to 0·46 and 0·92 after

delivery. In one case on the fifth day after delivery it rose to 2 mg. as normal. The nephritis and albuminuria cases showed no changes from the normal. Therefore, a diminution or total suppression of creatin was of value as a diagnostic point in severe cases of toxæmia as distinguished from simple albuminuria. Other conditions in which the creatin excretion was diminished were carcinoma of the liver, phosphorus poisoning, operative interference with the portal circulation, portal pyæmia, and deficiency of carbohydrate metabolism. Anaphylactic shock also might be shown later to have some influence upon the output of this substance.

Sir JOHN BYERS read a paper on

Rashes Occurring During the Puerperium.

He classified the eruptions that he had noted during the puerperium as follows: (1) iodoform rash; (2) lysol rash; (3) urticaria; (4) sudamina or miliaria rash; (5) erysipelas; and (6) scarlatiniform rashes—(*a*) mild type, (*b*) severe type. The lesion produced by iodoform, he said, was an erythema with or without pyrexia and rise of pulse-rate. If great susceptibility to the drug was present the hands, arms, and face swelled, and occasionally marked constitutional symptoms—e.g., headache, vomiting, and gastric irritability—occurred. The majority of cases followed the application of iodoform to wounds. The rash, as a rule, disappeared within 24 hours after the use of the drug was discontinued. A solution of lysol, one teaspoonful to the pint, occasionally produced much local irritation and a red rash when applied to the vulva during the puerperium. The eruption sometimes spread to the abdomen and sacrum, but as a rule ceased if boracic or other simple lotion was used instead. Urticaria was occasionally met with during the puerperium in patients not subject at other times to the condition. It presented the typical appearance and might be associated with the functional activity of the uterus. In one patient it appeared on the third or fourth day after each of three successive confinements. Sudamina or miliaria rash also occurred in some patients after delivery. It was especially marked under the binder, but as a rule no constitutional symptoms arose. A rarer type of a septic nature was associated with marked constitutional disturbance and bad prognosis. Erysipelas was much rarer now than formerly. Four cases, however, had occurred at the Belfast Maternity Hospital in the last two years. Although the streptococcus erysipelatis and the streptococcus usually met with in puerperal infection were almost identical, when the disease developed in the breast, scalp, or face of a puerperal woman the constitutional symptoms were much less than when the genitals were first involved. The scarlatiniform rashes which occurred in puerperal women might be divided into (*a*) mild and (*b*) severe. The mild type was characterised by a red petechial rash, pyrexia, and rapid pulse, without sore-throat, enlargement of submaxillary glands, or history of exposure to scarlet fever. The lochia was foul and contained streptococci. The majority of these patients got well. The severe type was associated with a very widespread petechial eruption, high fever, delirium, and marked coustitutional disturbance. The rash was very like that of true scarlatina and was followed by desquamation, but there was a total absence of all the other signs of that fever. Sir John Byers discussed in detail the relation of true scarlatina to the puerperium. Even at the present time some current text-books of midwifery taught that puerperal women were especially prone to scarlatina, and that the death-rate of such a complication was high. His own conclusions differed considerably. In his experience scarlatina was rarely encountered during the puerperium. When it did occur it was generally mild if properly treated. So-called "puerperal scarlatina" was practically always a *form of septic infection* with a rash *resembling* the eruption seen in true scarlatina. From a person ill with scarlatina it was possible to convey to a lying-in woman either true scarlatina or septicæmia arising from the secondary septic lesions apt to occur in the throat in scarlatina. The former was rare; the latter might be avoided by aseptic and antiseptic precautions. These conclusions were substantiated by statistics obtained during the epidemic of scarlatina in Belfast during the years 1909, 1910, and 1911.

The PRESIDENT personally had seen two cases of undoubted scarlatina in association with the puerperium, and quite agreed that all patients who developed a scarlatiniform rash ought to be regarded as septic.

Sir WILLIAM J. SMYLY (Dublin) could confirm all that had been said. When he first worked at the Rotunda Hospital it was generally thought that an attack of scarlatina during the puerperium was extremely dangerous. He was now of the opinion that the disease ran much the same course in the puerperal woman as in anybody else.

Mr. H. BECKWITH WHITEHOUSE (Birmingham) was interested in the occurrence of urticaria during the puerperium, since he had seen it occur regularly on the second or third day of menstruation in a patient otherwise healthy. He had attributed it to excretion of calcium in the menstrual blood, but administration of calcium chloride had no effect. Amongst "drug" rashes he thought that iodine certainly should be mentioned. At Birmingham both Dr. Thomas Wilson and he had seen a very severe erythematous and vesicular eruption follow the application of iodine in ethylene dichloride to the abdomen and vulva before operation. With regard to scarlatiniform rashes he remembered a "scare" that he had early in the year, when a patient was admitted to the gynæcological ward for an acute pyosalpinx that had developed post partum, and it was found that she was the subject of a petechial rash and desquamation. No other signs of scarlatina developed and no further case occurred. He thought that this case was an example of the group that Sir John Byers had so clearly demonstrated.

Dr. A. STOOKES (Liverpool) was prepared to admit that scarlatina could and did occur in the puerperal woman, but insisted that it was a very rare disease. He also thought that erysipelas had no marked effect upon the puerperium. In either case the patient need be no worse than if the disease had been contracted at any other time.

Dr. W. E. FOTHERGILL (Manchester) referred to the treatment of scarlatinal and other infectious cases adopted in Liverpool by Dr. Rundle. Each case was "isolated" in a general ward with a special nurse to deal with the patient exactly as if she had charge of a purely surgical case. There was no attempt at individual isolation of the various infectious diseases.

Dr. HEDLEY asked if Sir John Byers could give figures for the incidence of scarlatina in adults during the epidemic at Belfast. His opinion was that the disease was always rare in adults, whether pregnant or not.

Dr. C. E. PURSLOW (Birmingham) in his experience as obstetric physician to an extern midwifery department involving about 500 cases per annum had not met with a single case of scarlatina in the puerperium.

Dr. W. CASH REED (Liverpool) referred to the value of inunction of eucalyptus oil in the treatment of erysipelas.

Sir JOHN BYERS, in replying, said that he had brought the subject forward because the public still believed in the danger of scarlatina during the puerperium, and because he wished to clear away the erroneous views expressed in many of the existing text-books. In future, no case of scarlatiniform eruption could be diagnosed as scarlatina unless it was associated with the other well-known signs of the disease. He was interested to hear of urticaria occurring during menstruation. His own experience was limited to its occurrence post partum.

Dr. FOTHERGILL read a paper on

Developmental Errors of Puberty.

He said that in most treatises on gynæcology developmental errors were scattered throughout the book, and he thought that it would be much more convenient if they were all grouped into one chapter, divided into two portions, corresponding with the two phases of development in the female sexual organs—viz., errors occurring (1) during embryonic or intra-uterine life; and (2) at the time of puberty. He would not refer to the former well-known group, which included double uterus and the various forms of atresia. Abnormalities occurring at puberty, however, had not received the same attention, but were of equal importance. The majority of these developmental faults were of an aplasic or hypoplasic type. Thus, the clitoris, breasts, or cervix uteri might retain their infantile form. Occasionally, but rarely, hypertrophy occurred. Infantilism might be grouped under three headings: (1) cases in which the individual remained like a child in every way throughout life; (2) cases in which the secondary sexual characteristics developed but the functions of menstruation and ovulation remained in abeyance; and

(3) cases in which there were no physical signs of infantilism but where ovulation and menstruation were delayed. These errors were of considerable practical importance, and two instances might be cited. The first example was seen in hypertrophy of the cervix. In the child the cervix formed two-thirds of the uterus, but at puberty the corpus uteri enlarged out of proportion to the cervix. Occasionally the cervix might hypertrophy at puberty to such an extent that it protruded at the vulva. Clinically the case was usually first brought under notice as an example of "prolapse." Both fornices were, however, present. If the cervix was amputated and the perineum repaired the condition was cured; otherwise it gave rise to dyspareunia, and if labour occurred the condition was exaggerated by laceration, subinvolution, and œdema. There was no necessity to distinguish between hypertrophy of the vaginal and supra-vaginal portions or between hypertrophy in virgins and parous women. These terms might be replaced by the simple one of hypertrophy of the cervix at puberty. A second example of a developmental error was seen in the menorrhagia of young girls at and about puberty. Normally a great increase in the amount of muscle occurred at this period. If this was not sufficient then menorrhagia followed, since the loss of blood was directly controlled by uterine contraction. The endometrium in these cases was usually hypertrophied. Ergot and hydrastis were useless in treatment because the muscle was deficient. Time alone would cure the condition, but relief might be obtained by rest in bed and curettage, which might have to be performed more than once.

Dr. PURSLOW could not agree with Dr. Fothergill's remarks concerning hypertrophic cervix in virgins. He had seen many cases, and the majority, he felt sure, were the result of hard work and were but one variety of uterine prolapse. In hæmorrhage in young girls he had curetted with good results.

Dr. CHIPMAN thought, as regarded the two groups of developmental errors, that the one consisted rather of abnormalities in the proper "*assembling*" of the parts, whereas the other was rather an alteration in "*growth*." His own practice in the case of menorrhagia at puberty was to send the patient to a higher altitude. He never curetted unless the case was desperate.

The PRESIDENT agreed with Dr. Chipman's views. He also thought that hypertrophy of the cervix was certainly aggravated by hard work.

Dr. STOOKS asked how long it was necessary to go on curetting. Cases drifted off and it was impossible to tell when they were really cured. Although in Liverpool they lived in what might well be called a "calcium atmosphere," he had never found this condition improved by the administration of such salts.

Dr. HEDLEY asked if hypertrophy of the supra-vaginal cervix was common as a developmental error. He had always taught that it was dragged out by prolapse of the vaginal walls, the uterine body being fixed.

Dr. FOTHERGILL replied.

ERRATUM.—In THE LANCET of August 17th, p. 459, Professor J. B. Hellier was reported to have expressed the opinion that in 99 cases out of 100 albuminuria in pregnancy can be cured by milk diet. Professor Hellier writes to point out that it was not he who said this, and that he regards it as rather an exaggeration of the truth. We regret our reporter's mistake.

LARYNGOLOGY AND RHINOLOGY.

FRIDAY, JULY 26TH.

President, Dr. J. MIDDLEMASS HUNT (Liverpool).

Professor M. HAJEK (Vienna) opened the discussion on

The Treatment of Chronic Suppurative Disease of the Ethmoidal Sinuses.

He divided the subject as follows: I. Chronic suppuration combined with hyperplasia. (*a*) When the principal feature was polypus formation the treatment consisted in the removal of the polypi and the prevention of relapses. The best method was under local cocaine anæsthesia; the removal with the snare and by avulsion if possible, and the removal of the base with curettes or forceps. The causes of relapses were: (1) The overlooking of polypi originating in the depths of the meatus; (2) disease of the bony parts from which the polypi grew; (3) the polypi originating also from the interior of the ethmoidal cells; and (4) the primary cause of the polypi in many cases was a neglected latent empyema. The treatment always depended upon the particular condition present. It might include (1) resection of the greater part of the middle turbinated body; (2) removal of the bony base of the polypus; or (3) opening of the ethmoidal cells and removal of their lining membrane. Cutting instruments only were to be used, chemical and electric cauterisation being contra-indicated. The treatment always required several sittings. A good view of the operative field was indispensable. An interval was necessary between the individual operative proceedings. All polypus cases could be cured in time if no cause prohibited operative treatment. Lack's method—the removal of all polypi at one time under chloroform—might sometimes be considered, but was not generally employed. Operative treatment under general narcosis was difficult owing to the view of the operative field being less than under cocaine anæsthesia; also because of the necessity for completing the operation at one sitting it was performed in the absence of a knowledge of precise conditions, a dangerous procedure; moreover, all diseased parts could not be removed at one sitting. (*b*) When the principal feature was suppuration and the discharge free the treatment always depended upon the diagnosis after excluding other empyemata and the freedom of the openings of the ethmoidal cells. The removal of all the polypi and hypertrophied parts of the ethmoid was generally preceded by the resection of the middle turbinated body. The suppurating cells were precisely determined with the probe, and opened up with the hook and curette, the details of the operation depending on individual conditions. Special care was required in the region of the infundibular cells, from the proximity of the orbit and the lamina cribrosa. When the infundibular cells were situated high up an external operation was indicated. In opening the posterior ethmoidal cells one might begin at the anterior cells and gradually proceed backwards, or begin at once with the posterior labyrinth. The latter was attacked above in the level of the middle turbinated body. A high septal deviation, if present, must be previously corrected. As much as possible might be done at each sitting, but only so long as a good view was obtainable. An interval between sittings was indispensable to allow the reaction to subside. Packing of the nose after the operation should be avoided. Healing was always by superficial cicatrisation, never by the filling up of the ethmoidal cells. The external method was indicated (1) in cases with high infundibular cells inaccessible from the nasal cavity, (2) in very narrow nostrils with threatening symptoms, and (3) in cases complicated by severe frontal sinusitis. In cases in which a perforation had occurred the choice of operations depended on the nature of the case. Slight relapses were frequent even after radical operation. When the principal feature was suppuration and the ethmoidal cells were closed, the treatment generally consisted of opening a prominent portion of the dilated ethmoidal cells to obtain free discharge. That necessitated the removal of a large part of the bony wall. The details of treatment were decided by the findings after investigation with the probe. No important differences existed between the treatment of diseased single cells and that of the greater part of the labyrinth. An external operation was necessary only if the disease was complicated by perforation. II. In ethmoiditis associated with ozæna operative treatment was contra-indicated if the discharge was free. Curettage was resorted to only in cases of very definite disease of single cells. Threatening complications were treated by external operations. III. The treatment of secondary suppurative disease of the ethmoidal cells—e.g., tuberculosis, syphilis, malignant growths—depended upon the nature of primary disease.

Dr. H. LAMBERT LACK (London), in his introductory paper, said that operative treatment was invariably indicated, although there were non-operative adjuncts to the treatment. The symptoms were more serious than those occasioned by the same disease in the other sinuses. He regarded piecemeal operations under cocaine as dangerous. He advised packing of the nose with a solution of cocaine and adrenalin half an hour before operation with the ethmoidal curette. The antrum thereby could be more readily examined and if found diseased could be treated

first. The ring knife for curetting the ethmoidal cells should be introduced with the blunt edge towards the septum and the cutting edge should be turned not upwards but towards the orbit. It should be passed without force directly upwards and backwards, then drawn horizontally forward. After the operation the upper portion of the nose became lined with a white starred membrane. A continuance of the suppuration after curetting might mean suppurative disease in the other sinuses, the sphenoidal or the frontal. As to the dangers of the operation, his own statistics showed 1 death in 300 cases. As to the results of the operation at the hands of others he had learnt that 11 operators had had no deaths and three had had six deaths, all due to meningitis. The operation was serious, but he thought that the risks were justified. Little danger attended the operation if performed skilfully and with aseptic precautions. The patient should be under 40 and not over 50; after the latter age the bones in the ethmoidal region were more brittle. A rise of temperature after operation was not uncommonly due to packing the nose; if hæmorrhage occurred the nose had to be packed. The administration of vaccine preparatory to the operation was considered to obviate fever. Amongst the complications the orbital bone might be fractured and subsequently evidenced by a black eye. He regarded the operation with the curette as the best method of dealing with cases of uncomplicated ethmoidal suppuration.

Dr. W. L. BALLENGER (Chicago), continuing the introduction of the subject, said the disease might be acute or chronic, and that obstructive lesions in the nose were associated with the disease. When chronic, the nasal obstruction was a factor, and in acute cases the predisposing cause was not uncommonly a lowered vitality, which might be induced by nasal obstruction. He described his method for the complete exenteration of the ethmoidal labyrinth. He had found that violent reactions and high temperatures followed partial operations. He exhibited the instruments used for the removal of the entire ethmoidal mass. Cases in which the ethmoidal cells extended over the orbit called for an external operation. He never packed the nose, and he had had but one death out of a large number of cases.

Dr. H. P. MOSHER (Boston), continuing the discussion, said that formerly he had found intranasal operations in the sphenoidal region unsatisfactory and had preferred the external method. Since he had become acquainted with the work of Dr. Ballenger he had returned to the intranasal method. He briefly summarised the results of his anatomical investigations.

Dr. P. WATSON-WILLIAMS (Bristol) considered that an antero-posterior as well as a posterior obstruction of the nose was a source of great danger even if an ethmoiditis had not been established. He regarded the disease as an infective process of an insidious nature. The object of the operative treatment should be to establish sufficient drainage, and for that purpose he preferred the forceps before the curette.

Dr. WILLIAM HILL (London) dealt with the extent of the ethmoidal region, which he thought had been exaggerated.

Mr. R. H. WOODS (Dublin) was opposed to vaccine treatment.

Mr. HERBERT TILLEY (London) was a supporter of Dr. Lack's method of operating, as more direct and quicker. The average English patient required the treatment if possible to be carried out at one sitting and under chloroform. He used the ethmoidal forceps.

Mr. F. H. WESTMACOTT (Manchester) was against external operations. He preferred general anæsthesia for the primary operation and local anæsthesia for subsequent surgical treatment. He inquired of Professor Hajek his method of correcting a deviated septum when present in cases of suppurative ethmoiditis, whether by a submucous resection or by fracture of the deviated part. He also inquired why it was that after the removal of nasal obstruction at times the olfactory sense, previously lost, returned while at other times it did not.

Dr. W. JOBSON HORNE (London) said that whilst the title of the discussion was useful to themselves in defining its scope, nevertheless it might be misleading to others, inasmuch as it might create the impression that chronic suppurative ethmoiditis was an entity. It was quite evident from what had been said that the sphenoidal and frontal sinuses were not uncommonly involved. Moreover, both on anatomical and developmental as well as on clinical grounds, it was as well to regard the sphenoidal and frontal sinuses as more highly developed cells of the ethmoidal labyrinth. He urged the use of X rays in the investigation of the extent of the disease and of the presence or absence, as well as the size and situation, of the larger cells. He was opposed to operations which necessitated blindly groping in the dark. The operative treatment, he considered, should be done under direct ocular inspection.

Dr. A. BRONNER (Bradford) objected to general anæsthetics in operations upon the ethmoid. It was necessary to remove any intranasal obstruction. He did not regard Dr. Lack's operation as the operation of the future.

Professor HAJEK, in replying, again urged the importance of a perfect diagnosis and of everything operative being done under the eye. The anatomy varied so much that it was impossible to generalise. The middle turbinate body had to be removed in most cases to see what to do. If there were no subjective symptoms, and little or no pus, there was no reason for operating.

Dr. LAMBERT LACK, in his reply, expressed his satisfaction with the debate and his gratification at learning that so many had practised his operation. He regarded his operation, not as the one of the future, but as the one of to-day.

Dr. BALLENGER also replied.

PATHOLOGY.

FRIDAY, JULY 26TH.

President, Professor I. WALKER HALL (Bristol).

Dr. T. J. HORDER (London) read a paper on

The Investigation of Puncture Fluids as an Aid to Diagnosis and Treatment.

In this he touched first on the technique which, simple though it appeared, was often barbarous in its application from the attempt to use blunt or rusty needles, &c. He grouped the various punctures into punctures of certain cavities, of certain solid organs, and of certain adventitious structures (e.g., abscesses, cysts, &c.). He considered that in skilled hands there were no dangers or ill-effects from the procedure, but he was not prepared to carry out pleural or lumbar puncture in the out-patient department or consulting room. The patient should be kept in bed for 24 hours afterwards. Even lung punctures he regarded as safe. He would submit the fluid so obtained to cytological, chemical, physical, and bacteriological investigation, though one or other was usually of special importance according to the case in question. He summed up the value in diagnosis by saying that cytological examination, broadly speaking, diagnosed between tuberculous and pyogenic inflammations. Chemical examination of fluids from serous sacs determined whether they were transudates or exudates. Parasyphilitic disease often gave a cerebro-spinal fluid containing a globulin; uræmia a fluid with urea. Bacteriologically the causal agent in meningitis, arthritis, pleural effusion, pneumonia, &c., was recognised and often allowed of a very early diagnosis before definite clinical signs appeared. The puncture likewise was often of therapeutic value—e.g., drainage of pleural effusion, meningitic effusion, joints, &c., apart from the fact that the earlier the diagnosis be made the more sure the results of treatment.

Dr. PURVES STEWART (London) agreed that pyogenic infections usually produced a polymorph leucocytosis, whereas tuberculous infection usually produced a monomorph leucocytosis, but this rule was not absolute, for during convalescence from a pyogenic infection of the meninges the cerebro-spinal fluid passed through a later stage of monomorph leucocytosis on the way to recovery. Further, during an acute attack of tuberculous meningitis the leucocytosis was not infrequently of a polymorph type. He believed that not the particular organism determined the type of the leucocytosis, but the acuteness of the infection—an acute infection producing the polymorph, a subacute or chronic one the monomorph leucocytosis. Moreover, even an infection was not essential for the production of leucocytosis. He had experimentally injected the spinal theca in monkeys with a sterile emulsion of carmine when studying the lymph-paths within the spinal cord. In every case there was produced a temporary polymorph leucocytosis, changing within a few days to a monomorph leucocytosis, and ultimately clearing up entirely. He had never found a general anæsthetic necessary to perform thecal puncture.

He described a method whereby one could perform thecal puncture even on a violent patient by fixing his knees to his chin with a roller-towel or a strong portmanteau-strap.

Dr. J. M. BERNSTEIN (London) commented on the finding of a marked lymphocytosis in some cases of acute poliomyelitis.

Dr. THEODORE SHENNAN (Edinburgh) suggested keeping needles in a solution of 1 part lysol and 12 parts dehydrated spirit, which prevented the formation of rust. He agreed with Dr. Stewart as to the occasional finding of a polymorphic tuberculous cerebro-spinal fluid, and asked for details as to the preparation and fixation of films from the cerebro-spinal fluid.

Dr. HORDER, in replying, agreed with Dr. Stewart as to the occasional polymorphonuclear increase in tuberculous meningitis, but these cases were usually acute, whereas in contrast he had occasionally found a lymphocytic increase in meningococcal exudates of chronic standing. So that he considered the nature of the cell exudate was dependent on the rate of its formation rather than upon the nature of the infection. The formula must be taken as a general rule only. It was not invariable. In a recent report to the Local Government Board Dr. Gordon showed that a moderate lymphocytosis existed in acute poliomyelitis, but that if a careful consideration were given to all the tests—chemical and cytological—applied to the fluid there was no difficulty in differentiating the various conditions.

Dr. C. BOLTON (London) then read a paper on

The Rôle of the Gastric Juice in the Pathology of Gastric Ulcer.

He said that the pathological processes present in gastric ulcer involved so many factors that it was impossible to obtain from the study of human pathology alone an exact idea of the influence exerted by the gastric juice. One must, therefore, resort to the experimental method. In this series of experiments the ulcers were produced in the first instance by the injection into animals, either locally or *vid* the peritoneum, of a gastro-toxic serum prepared by the author's process of immunisation, the animals used being the guinea-pig and the cat. It was found that when the gastric juice was put out of action by neutralisation with an alkali ulceration failed to appear. The actual necrosis was, therefore, brought about by the gastric juice, and no microscopic change could be found in the cells preceding their digestion by the gastric juice. The change in the cells which brought about self-digestion was not due to the removal of the influence of any specific antibody, because other blood poisons reacted in a similar manner. This established the principle that various blood poisons might bring about self-digestion without actually causing necrosis of the gastric mucous membrane. It was found that the gastrotoxic lesions were increased by hyperacidity of the gastric juice, the HCl acting as a protoplasmic poison. Other substances acted in like manner; for instance, acetic acid of one-eighth the strength of vinegar, caused a marked increase of the ulceration. The rapidity of formation of an ulcer was found to vary in proportion to the activity of the gastric juice, and to depend largely on the kind of diet administered. With regard to the *healing* of the ulcers, it was demonstrated that so long as the motor power of the stomach remained normal any increase or diminution in the acidity of the gastric juice to the extent found in human pathology had no tendency to impede the healing process. When pyloric stenosis, leading to retention of food, was produced, the healing was definitely delayed for at least twice the normal time. The delay occurred in the early stages, and was due, not to a fault in the epithelium, but to necrosis of the connective tissue base of the ulcer and also to excessive formation of fibrous tissue in it, the young cells having no cellular stroma over which to grow. This was due to the prolonged action of the gastric juice on the connective tissue. For the same reason it was found that in normal animals the ulcers healed most rapidly when the animals were fed on food which left the stomach quietly and excited only a moderate flow of gastric juice. In the treatment of a case of gastric ulcer, therefore, the acidity of the stomach contents should be kept low by the administration of alkalies. The diet should be free from irritants, and should consist of food-stuffs which remained only a short time in the stomach and excited only a moderate flow of gastric juice. If dilatation of the stomach and retention of food owing to muscular insufficiency, which resisted medical treatment, or pyloric stenosis, were present, gastro-enterostomy should be performed.

Sir BERTRAND DAWSON (London) pointed out that the paper just read was of even greater importance than the previous papers of Dr. Bolton, as it threw some light on the formation of chronic ulcer, which was the really important point in human beings that demanded explanation. Clinical experience bore out the view that the stage of acute or mucous ulcer often showed evidence of microbic or toxic invasion of the stomach, whereas in chronic ulcer the chief factor at work was the hydrochloric acid. In the former there was often a normal or lowered HCl content, whereas in the latter hyperchlorhydria was present. It was an important observation that other acids favoured ulcer formation. He suggested that the reason why the cats that were fed on meat healed more slowly than those fed on milk was that meat diets remained longer in the stomach. He had found that middle-aged people with gastric ulcer often showed evidence of delayed stomach emptying independently of pyloric obstruction.

Dr. BOLTON, in replying, reminded Sir Bertrand Dawson that when chronic gastric ulcer existed an acute injection elsewhere, such as in the finger, often led to an acute spread of the gastric lesion.

Dr. SHENNAN and Dr. J. H. HARVEY PIRIE (Edinburgh) discussed the

Etiology of Dissecting Aneurysms.

They pointed out that the commonly accepted explanation of the causation of dissecting aneurysm did not apply in all cases. Many of these occurred in the absence of nodular atheroma or atheromatous ulceration of the intima of the aorta. In recent cases which they had examined they had found important degenerative changes in the media affecting the elastic tissue, as well as the connective tissue and the unstriped muscle fibres, and affecting especially the middle third of the media. In the intima the elastic tissue had largely disappeared, and its structure had become opened up, in addition to underlying moderate fatty degeneration, so that it readily gave way when the support of the media was lost. They applied to the human aorta the results obtained by engineers, from examination of tubes exposed to great internal strain, but a more important consideration was that the area of the wall especially affected was that farthest removed from its supply of nutrition, whether from the vasa vasorum or from the lumen of the vessel. Other authors explained the rupture of the wall on the ground of (1) increased blood pressure, (2) actual trauma, or (3) degeneration of the wall. The present authors from their work concluded that the last factor was the most important, the others being capable of exclusion in some of the cases encountered by themselves or reported by others. The paper was illustrated with the lantern.

Dr. H. MACLEAN (London), in a paper on

Testing Urines for Sugar,

remarked that in this country the two tests employed in testing urine for sugar were Trommer's test and Fehling's test. Trommer's test was exceedingly simple, as only two reagents were required—$CuSO_4$ and NaOH—but it demanded great care in its application. If, for instance, a urine of specific gravity 1016–1018 was examined for sugar by Trommer's test the result depended very greatly on the order in which the reagents were added. If the copper sulphate solution was first added to the urine and then the sodium hydrate, it would be found that a considerable amount of the cuprous hydroxide formed passed into solution and a deep blue fluid was obtained, which on heating might give a reduction. Both the formation of the blue liquid and the reduction on heating strongly suggested sugar but on treating a sample of the same urine, first with sodium hydrate, and then with copper sulphate, much of the cuprous hydroxide formed remained undissolved and on heating no reduction occurred. When tested by other methods this urine was found to contain only the physiological trace of sugar present in normal urine. Salkowski and Schulz ascribed this anomalous result to the presence of creatinin. On the other hand, when the alkali was added first, the subsequent addition of too much copper might result in a reaction being obtained with a normal urine. Thus in the presence of small amounts of sugar the interpretation of Trommer's test was not always easy. In the case of Fehling's test many difficulties were also encountered, but it had been found that

urines giving more or less ill-defined reactions with this test did contain sugar somewhat in excess of the normal amount per cubic centimetre of urine. This might be due to concentration, but often there was an absolute increase. These anomalous reactions depended on the interfering power of creatinin, which possessed the power of holding reduced cuprous oxide in solution. For this reason a urine containing sufficient sugar to react with Fehling's solution gave no reaction when tested in the ordinary way. Here the sugar reduced its equivalent amount of cupric oxide to the cuprous form, but no precipitate was formed because the reduced oxide remained in solution. Creatinin also possessed the power of modifying the nature of the precipitate formed. If a urine contained slightly more sugar than normal and a reaction took place on boiling with Fehling's solution, the precipitate might separate in such a finely divided form as to give a greenish or greenish-yellow opalescent fluid. With a little more sugar the particles of the reduced oxide were larger, and a yellow-coloured precipitate was obtained. With excess of sugar the ordinary red granular precipitate was in evidence. All these anomalous reactions depended on the action of the creatinin present in the urine and were generally caused by sugar. The reducing power of urine after the exhibition of such substances as alcohol and chloroform was often due to the presence of sugar. Many patients were so susceptible to alcohol that a comparatively small amount produced marked glycosuria.

Sir BERTRAND DAWSON advocated the administration in doubtful cases of slight glycosuria of a test meal of 100 grammes of glucose. He had also found that temperate habits in young people would remove mild degrees of glycosuria. He sought for information as to the significance of temporary glycosuria.

Dr. P. J. CAMMIDGE (London) thought that on account of the many fallacies in connexion with Trommer's test and Fehling's test great care should be taken in interpreting the results. Latterly he had been using Benedict's test, which had the advantage of using a single solution that kept indefinitely and required only a very small quantity of urine. Slight reactions were to his mind of great importance, and unless a test meal of sugar showed that the cause was but a temporary one, the suspicion should be aroused that the patient was a potential diabetic, and the diet should be worked out on the basis of the experimentally determined sugar tolerance.

The PRESIDENT pointed out that in glucose test meals it was important to exclude the action of protein as a great irritant of the sugar-producing mechanism. He considered that it was advisable to diminish the intake of protein a little below the average on the days when the glucose was given.

Dr. MACLEAN, in replying, pointed out that he had noted that experimentally animals could be made to produce a glycosuric condition when treated with alcohol.

Dr. O. T. WILLIAMS (Liverpool), in a paper on

The Excretory Function of the Intestine in Relation to Disease,

pointed out that intestinal concretions, such as intestinal sand, fæcal concretions, enteroliths, and so forth, when investigated as to their chemical composition, structure, time, and site of occurrence, were found to have many factors in common, no matter in what part of the intestine or its appendages they might have arisen. He considered them to be manifestations of some abnormal condition in the excretion of the intestine and its appendages. In a previous note he had shown a close similarity in the chemical composition of intestinal sand found in mucous colitis and of appendix concretions. He discussed in his present paper intestinal sand, appendix concretions, intestinal concretions, and gall-stones. He suggested that all were the result of excretion of the mucosa of the intestine, and possibly consisted of the waste products of fat metabolism, which in combination with calcium would form the concretions (which, indeed, contained saturated fat or insoluble calcium soaps). These soaps would easily cause obstruction in the appendix, or by deposition on the mucosa and submucosa so diminish the vitality of the part as to allow of infection. In the wider biliary passages there was room for the flow and elimination of the soaps, but when the mucosa produced more easily precipitable allied bodies concretions were formed. In the still wider intestine there was ample room for elimination, and it was only the effects that were produced—e.g., mucous colitis—but rarely even here concretions might be formed. He therefore propounded the view that all these states were not due to local disorders, but were the manifestations of a general metabolic disorder which threw on the intestine or its appendages the onus of excreting deleterious products.

Dr. CAMMIDGE thought that the function of the intestine was probably much more important than was generally supposed, and also that the heavy metals and fats were indeed excreted. He had found that in colitis the saponified fats and inorganic acids were nearly always increased.

Mr. D. P. DALBRECK WILKIE (Edinburgh) read a paper on

The Association of Duodenal Ulcer with Morbid Conditions in the Ileum, Appendix, and Colon.

He gave a description (illustrated by lantern slides) of 10 cases of duodenal ulcer observed in the post-mortem room in all of which some pathological lesion was found in the lower reaches of the alimentary tract. In 3 of these cases death had resulted from acute appendicitis; in 2 evidence of old appendicular trouble was present, while in the remaining 5 the appendix was healthy, but a more or less marked degree of pericolitis, which by crippling the colon had led to fæcal stasis, was present. In 2 cases, also, the lower end of the ileum was bound down and the emptying of the small intestine had evidently been interfered with. He believed that the existence of these lesions in the lower bowel played some part in determining the chronicity of duodenal ulcer, and that at operation for duodenal ulcer they should be looked for and, where found, should be regarded as part of the condition producing the symptom-complex for which the operation was undertaken.

PHYSIOLOGY.

FRIDAY, JULY 26TH.

President, Professor J. S. MACDONALD (Sheffield).

Professor F. A. BAINBRIDGE (Newcastle) read a paper on

The Effects of the Retention of Urine.

The question which he tried to answer was whether the death of animals after removal of large parts of the kidneys was due to the absence of a normal internal secretion of the kidneys or to a retention of urine. In his experiments he had caused the retention of urine either by the division of the uterus or by the formation of an opening between the bladder and the peritoneal cavity; while a third manner was the collection of urine in the ordinary way and its re-injection into the animal. The animals all died in a state of coma within 36–48 hours of the commencement of the experiment. The death occurred within the same time as in experiments in which the kidneys were removed. Professor Bainbridge drew the conclusion that death in the latter case was not due to the removal of an essential internal secretion—for in his own experiments such a secretion must have been present. It was due to the retention of urine. Perhaps the death was caused by an upsetting of metabolism due to retention of acids.

Professor W. H. THOMPSON (Dublin) asked Professor Bainbridge if he had repeated certain experiments of Bradford's. He spoke of the toxic substances in urine and their nature.

Professor BAINBRIDGE, in reply, said that the alcoholic precipitate and filtrate of urine were both toxic.

Dr. H. M. VERNON (Oxford) then read a paper on

The Function of Lipoids in Vital Processes.

He stated that the narcotic action of chloroform, &c., depended upon solution of the lipoids. He described experiments upon the gaseous metabolism of the kidneys on perfusion with various alcohols; and he showed some slides illustrating his results. He came to the conclusion that alcohol dissolved and destroyed some essential lipoid membrane. He then turned to the question of the reaction of oxydase to alcohol. The reaction was a sharp one, and other narcotics—ether, chloroform, &c.—had a similar destructive action, destroying an essential lipoid membrane.

Professor MACALLUM (Toronto) drew attention to some work which seemed to show that the lipoids did not play the rôle ascribed to them by some. Surface tension was a most important factor, and observations had been made too largely from one point of view.

The PRESIDENT raised the point of the formation of intracellular membranes containing electrolytic solutions, the membranes being of lipoid materials. These would permit of the retention of electrical energy on their surfaces. Reduction upon the one side and oxidation upon the other might be conditioned by currents determined by differences in electrical potential. The lipoids might thus divide the cell into small compartments, and on their solution or destruction there might be destruction of the oxidising properties of the cell.

Dr. VERNON, in replying, dealt with the question raised by the President. He quoted experiments for and against the demonstration that lipoid intracellular processes played a rôle in oxidation.

Professor C. S. SHERRINGTON (Liverpool) read a paper on

Some Instances of Uncertainty in Reflex Reactions.

He first spoke of the question of variability in reflexes, and mentioned the two views—of machine-like regularity and of great experimental variability—which had once been held. He suggested that the idea of the great irregularity of reflex responses might perhaps be due to the large extent to which the frog's gastrocnemius muscle had been used. That muscle was, in reality, an extensor. It fixed the knee in order to extend the ankle. The resting posture of the frog's hind limb was one of flexion. There was a postural flexor tonus—the reverse of the phenomena in the mammal. The variability of the gastrocnemius reflex reactions was perhaps due to the usual reflex being the flexion-reflex, in which the gastrocnemius elongated under inhibitory relaxation. The toneless condition of the muscle, however, prevented this being seen, and this had led people to think that there was thus no reflex action. Thus the idea of uncertainty of appearance of reflexes in the frog had arisen. Reversal of reflex reaction involved the shunting of excitation to inhibition. In the mammal the preparations were more reliable. Professor Sherrington then gave a description of some reversals, which he illustrated with a beautiful series of lantern slides. He mentioned the experiments of Sowton and himself in the decerebrate preparation of the cat. These—graduation of the strength of stimulus—conditioned a reversal from the unusual extension-reflex to the usual flexion-reflex. The state of the "background" was another factor. He alluded to Graham Brown's idea of "neural balance," and then gave a description of reflex reversal under the influence of strychnine. In conclusion, he described some of the recent experiments of Graham Brown and himself in which it was found that a reversal of the reactions obtained from one and the same cortical point in the motor area might be conditioned by stimulation of the sensory nerves of the limbs.

Dr. T. GRAHAM BROWN (Liverpool) mentioned some other forms of reflex reversal. He described some of his own observations upon reversal conditioned by change of strength of stimulus, and added an additional point in that he had found the condition to occur after division of the sensory nerve fibres of the muscles themselves. He then described some other forms of reflex reversal, and concluded with a lantern demonstration of some other cortical reversals examined by him and Professor Sherrington in monkeys and apes. They had found that reversal of a cortical reaction might be conditioned by intercurrent stimulation of an antagonistic cortical motor point, and also by repetition of stimulation of one and the same point.

The PRESIDENT expressed, on behalf of the meeting, the great pleasure it had had in listening to Professor Sherrington's paper and in hearing him speak upon such a subject in his own laboratory. He emphasised the difficulty of the problems of the functions of the brain and their present uncertainty with regard to the whole question. He spoke of the different organs involved in reflex phenomena and of the complexity of the nerve cell. In conclusion, he referred to the question of the part which inhibition of the medullary centres might play in death after violent stimulation.

Professor THOMPSON spoke of their changing ideas with regard to the cerebral cortex. He said that the explanation of the phenomena met with—a question of fundamental importance—must be awaited.

Professor T. H. MILROY (Belfast) referred to the question of the functions of the post-central gyrus, and asked if Dr. Graham Brown and Professor Sherrington had done any experiments with regard to this.

Professor SHERRINGTON, in replying, spoke of strychnine reversal and the absence of an asphyxia reversal. He laid stress upon the difficulties in the explanation of reversals.

Dr. J. A. MILROY (Belfast) then read a paper upon

A Rapid Method for the Estimation of Urea.

His experiments, he said, were directed to the discovery of a simple, rapid, and accurate method for the estimation of urea. He referred to the disadvantages of Folin's method for clinical use and to the difficulties which beset the problem. His own method was one of formol titration, precipitation of phosphates, determination of pre-formed ammonia and amino acids in filtrate by formol titration, hydrolysis, formol titration again for urea reduced to ammonia. The difference between the two filtrates gave the urea, 1 c.c. of acid being equal to 3 mgr. of urea.

Professor THOMPSON spoke, and Dr. E. P. CATHCART (Glasgow) described Folin's new method, which was one of great simplicity and rapidity.

Dr. J. HADDON (Hawick) thought that for clinical purposes the question of acidity in the urine was more important than that of the amount of urea.

Dr. MILROY replied.

Professor T. H. MILROY (Belfast) then read a paper upon

Observations in the Production of Apnœa.

He spoke of the parts played by the nervous regulating mechanism and the gaseous regulating mechanism. Also of the duration of apnœa in unchanged total pulmonary ventilation; and of the part played by the vagi, giving a description of experiments in which the vagi were cut. He also described experiments in which different gases were used. He emphasised the importance of the gaseous factor in these cases. In recovery from apnœa the vagus effects were seen. When the centre again became active the first lung stimuli acted. He analysed the gases at definite intervals during apnœa. He found that the first change here was an extremely rapid absorption of oxygen. He emphasised the importance of interference with the blood flow by mechanical factors.

Professor R. J. ANDERSON (Galway) read a paper on

The Comparative Effects of Training on Animal Activities.

He emphasised the biological point of view, and gave a description of the trained sheep-dog. He mentioned the work of Pavloff and his pupils and analysed the various factors—muscles and their end-organs, reflexes, &c. He emphasised the value of strict training in children, but noted at the same time the influence of heredity. In conclusion, he spoke of recent work on the internal secretions and again emphasised the effects of training.

The PRESIDENT, in bringing the meeting to a close, spoke of the thanks which they owed to Professor Sherrington and the laboratory for the manner in which the meeting had been arranged, and to the secretaries of the section for the organisation of the business.

After a vote of thanks to the President the meeting was concluded.

PHARMACOLOGY AND THERAPEUTICS.

FRIDAY, JULY 26TH.

President, Professor W. E. DIXON, F.R.S. (Cambridge).

Friday's proceedings were devoted to a

Discussion on the Rôle of Calcium Salts as Therapeutic Agents.

Sir JAMES BARR, dealing with the matter from the therapeutic standpoint, said that there was a much greater quantity of calcium excreted than was generally supposed, and in kidney inefficiency the amount present in the blood was apt to rise. The popular view that milk was a suitable diet in adult life in any form of illness was erroneous. The excess of lime salts in milk might in certain cases be productive of harm. In the production of intestinal stasis the lime salts played an important part, an excess of lime in the wall of the bowel being frequently the cause of spasmodic contraction. On the other hand, in atony of the stomach and intestines there was a deficiency of lime in these organs. He demonstrated by the usual tests that in many of the continental spa waters an excess of lime was present, so that

when there was already an excess of lime in the system the benefit of them was doubtful.

Professor BENJAMIN MOORE (Liverpool) dealt with the excretory aspect of the question only. The element calcium, he said, held a unique position in the body. The heavy metals were poisonous to the economy because they became locked up with the cytoplasm; but the metals of the alkaline earths did not become entirely "locked" in their relationship with the proteids of the animal cell. They were able to enter into a state of reversible reaction. Calcium lay midway between the heavy metals and the alkaline earths. One of the most important properties of calcium was its effect on the contractility of the heart and of the skeletal muscles. He referred to Ringer's experiments with calcium, and attached much importance to his discoveries as to the action of its salts. According to the degree of oxidation, soluble or insoluble calcium salts might be formed. There was a close correspondence between the deposition of calcium salts physiologically and that which occurred in certain pathological states. In both cases a state of incomplete oxidation was responsible for the phenomena. In aged arteries, where the vessels of the arterial wall had given way, and owing to lack of blood-supply oxidation had been interfered with, calcareous degeneration began to appear. It was for this reason also, he said, that calcium was the predominant kat-ion in the incompletely oxidised bodies, such as calcium urate and calcium phosphate, which appeared in gout and in renal calculi. The principal factors in the deposit were the insolubility of these salts of calcium, slow circulation, and diminished oxidation. The urine was not the only channel of excretion of calcium; a large amount was thrown out also by the intestine. He would summarise the position in two points: 1. That calcium held a unique position in the economy. It was in a state of oscillating equilibrium with regard to the cytoplasm, and disturbances of this would alter the whole metabolism of the body. 2. The salts of calcium were precipitated in pathological states by incomplete oxidation.

The PRESIDENT having briefly discussed the observations made by the openers of the discussion, Professor R. B. WILD (Manchester) dealt with (*a*) the pharmacological action of calcium; and (*b*) the clinical uses. He referred to the calcium content of the body and the question of balance. A certain amount was necessary, and it could vary only between narrow limits. Deficiency or excess equally caused disturbance. The effect of calcium on the coagulability of the blood lay also within narrow limits. If the dose were increased beyond a certain point diminished coagulability again resulted. The question of absorption was not yet settled, and the speaker's view was that its action was mainly local. With regard to excretion, an analysis of the urine of patients on a fixed diet showed a curious cyclical variation. Clinically he had tried calcium for the groups of urticarias and vaso-motor skin disorders with good results, but he considered that Wright's conclusion, that the success of treatment in these cases was due to an increase in the coagulability of the blood was altogether in error. He had come to the conclusion that the soluble salts of calcium were of no especial value. Mistura cretæ was just as useful as calcium lactate and agreed better.

Mr. G. R. MINES (Cambridge), who discussed the calcium salts in relation to neuro-muscular mechanisms, said that all exact knowledge of the relations of inorganic salts to living tissues was derived from the study of isolated tissues under precisely defined chemical conditions. It was by finding out what tissues could do under known conditions that they should discover the intimate nature of their mechanisms. What they actually did in the body was irrelevant to this inquiry, for the chemical conditions under which they were placed were so complex as to elude definition. Living tissues were colloidal systems, and were, therefore, liable to be influenced by electrolytes which modified the distribution of surface energy in such systems. Superimposed upon "ionic" effects there were more specific relations due to the chemical combination of ions, with the materials of which the tissues were composed. In the relations of the calcium ion to living tissue the latter type of action was of paramount importance, as, for instance, in the contraction of heart muscle and in the transmission of excitation from nerve to muscle. "Ionic" effects could be traced in the relation of calcium to the excitability of skeletal muscles and in its antagonism to potassium. Such conclusions were arrived at by comparative methods, and their interest lay in the direction of functional analysis. This analysis might ultimately come to form part of the basis of scientific medicine.

Dr. W. BLAIR BELL (Liverpool) disagreed with the view that the calcium salts were not absorbed by the intestine. If this were so, what happened in the case of the growing child in whom these salts of calcium were so needed? He admitted that there was great variability of absorption in individuals. Calcium metabolism was largely regulated by the ductless glands, and the clinical evidence had shown that their true relation must be worked out physiologically. The actual coagulability of the blood was not so influenced as had been stated by Wright. He did not believe that the good effects of calcium in the urticarias had anything to do with the coagulability of the blood. He suggested that the condition present in these cases was more of the nature of an excessive fluid inhibition on the part of the cells, and that the addition of calcium prevented the cells from taking up fluid so readily. In women it was a fact that the calcium salts were largely eliminated during menstruation, and it was worth noting that in women calcareous degeneration was not nearly so common as in men. An estimation of the calcium content of the urine was a better guide than the amount of fæcal excretion of these salts. Arteritis existed before a calcium deposit occurred, and in his view the so-called calcareous degeneration was really a reparative process. He believed in giving calcium in large doses—3 i. for a dose in the form of calcium lactate. He had found that given in large doses it acted as an aperient.

Dr. F. RANSOM, who followed, dealt chiefly with the large output of calcium in cases of diabetes. His experience was that the greater the amount of glycosuria present, the larger was the excretion of calcium. The amount of calcium excreted could be reduced by giving another alkali such as sodium bicarbonate.

Professor MOORE replied, and after some congratulatory words from the PRESIDENT the work of the section concluded.

NEUROLOGY AND PSYCHOLOGICAL MEDICINE.

FRIDAY, JULY 26TH.

President: Dr. LANDEL ROSE OSWALD (Glasgow).

Dr. J. MICHELL CLARKE (Bristol) read a paper on

A Case of Tumour of the Corpus Callosum (with Specimens).

Dr. Michell Clarke's case added one more to the not too long list of cerebral tumours associated clinically with motor apraxia in which the lesion had been accurately determined by pathological examination. Dr. Michell Clarke said that the earliest symptom in this case was attacks of transient loss of speech (the patient was a right-handed man), followed later by the classical signs of intracranial tumour; eventually both legs became weak, but there was not any degree of hemiplegia, such as to incapacitate the patient from making any movement at all. Certain mental symptoms—viz., dulness, apathy, and confusion—supervened, rendering examination difficult. It was observed, however, that whereas the patient understood everything that was said to him sufficiently well—i.e., had no degree of sensory aphasia or agnosia—he was unable or unwilling to use the left arm for anything, always employing the right arm, and sometimes even attempting with the latter to aid the former. Yet there was no paralysis of the left arm. On closer examination it was found that there was practically complete motor apraxia of the left arm; its voluntary movements were aimless, inaccurate, incorrect. The striking unilaterality of the apraxia rendered the case the more valuable. The lesion was a tumour of the left anterior centrum ovale, invading the corpus callosum; it lay underneath the middle and posterior parts of the upper frontal convolutions on the left side. The case was illustrated with lantern slides, and will be published elsewhere.

The PRESIDENT pointed out that tumours in that region sometimes gave rise to only mental symptoms, without definite physical signs of gross nervous lesion.

Dr. WILLIAM ALEXANDER (Liverpool) read a paper on

The Nature and Treatment of Epilepsy.

He said that he considered œdema of the pia arachnoid an etiological factor of importance in epilepsy; he thought this œdema was most marked at the site of the disease in focal epilepsy, and that it might lead secondarily to malnutrition

of the cortical cells. He considered that in epilepsy treatment should always be commenced as early as possible, and should be prosecuted for a number of years. Potassium bromide, in his opinion, led or might lead to pronounced mental deterioration, and he preferred moderate doses of sodium bromide and sodium biborate. Both from the point of view of treatment of the epilepsy and from that of the general well-being of the patient he considered colony treatment desirable, and he could say from experience that the results had been extremely favourable. Dr. Alexander also spoke of the vexed question of the surgical treatment of idiopathic epilepsy, and referred to a series of 30 cases in which treatment by fenestration of the dura mater had been tried. In the majority marked improvement in the actual number of epileptic attacks had been observed, about one-third of the cases exhibiting permanent improvement.

Dr. F. E. BATTEN (London), Dr. MICHELL CLARKE, Dr. DAVID BLAIR (Lancaster), Dr. W. B. WARRINGTON (Liverpool), Dr. H. CRICHTON MILLER (London), Dr. C. WILLIAMS, and the PRESIDENT took part in the discussion.

Dr. W. MAULE SMITH (Bromsgrove) read a paper on

The Use of Extract of Brain Tissue in the Treatment of Various Forms of Insanity.

The extract was prepared from the brains of freshly killed animals. It was employed in a number of different forms of insanity, both acute and chronic, in many of the cases either an amelioration of the symptoms or a pronounced improvement being observed.

Dr. IVY MCKENZIE and Dr. R. M. MARSHALL (Glasgow) communicated a paper on

A Clinical and Pathological Study of Some Cases of Dementia Præcox.

Three cases were briefly detailed in which previously normal individuals, after an attack of acute insanity, exhibited the psychical impairment characteristic of dementia præcox. The cases were of interest as illustrating the course of certain disorders which came under that category. The writers of the paper considered that dementia præcox was a stationary condition resulting from an acute psychosis, which led to some permanent mental weakness, with an attempt on the part of the patients to adapt themselves to their environment with the diminished mental capacity which they possessed.

Dr. HENRY DEVINE (Wakefield) and Dr. MAULE SMITH commented on the paper.

Dr. DAVID N. NABARRO (Wakefield) read a paper on the Results of the Wassermann Reaction in 150 Cases of Mental Disease.

Dr. A. T. SCHOFIELD (London) and Dr. MURRAY LESLIE (London) contributed a paper on

Psychasthenia and its Differentiation from Neurasthenia.

The writers considered that psychasthenia, as distinguished from neurasthenia, was a distinct disease, constituted essentially by a perversion of the higher brain centres, whereas neurasthenia was the result of exhaustion of the same.

DERMATOLOGY.

THURSDAY, JULY 25TH.

President, Professor W. G. SMITH (Dublin).

Dr. LUCIEN DE BEURMANN (Paris) contributed a paper on

Sporotrichosis,

which was translated and read by Dr. R. W. MACKENNA. Dr. de Beurmann characterised sporotrichosis as a new disease, the existence of which had been demonstrated only during the last ten years. It had doubtless existed before, but had been confused hitherto with syphilis, tuberculosis, coucal affections, and so forth. It was an infection common to man and animals caused by filamentous spore-bearing fungi of the genus sporotrichum. He discussed the inter-relations of the various forms, the distribution of which was very wide. He described the sporotrichum beurmanni, and its most characteristic lesion, the nodule, possessing a structure closely allied to the lesion of syphilis, tuberculosis, and the agents of chronic suppuration. As to etiology and pathogenesis, he said that any objects soiled with vegetable débris containing the parasites might inoculate with the sporotrichum into a wound in the skin or mucous membrane. In several cases the animal origin also of sporotrichosis had been proved. The organism might live as a saprophyte in the pharynx of certain people, who then became carriers. It might also be introduced by food, especially green vegetables. The invasion of the organism took place in the disseminated form by the blood stream, and in the systemic lymphatic form by the lymphatics. The influence of the soil on its development was considerable. Healthy and vigorous people often escaped infection. Most of the patients had been convalescent, cachectic, or overworked subjects. The multiplicity of forms and lesions made the disease interesting, not only to the dermatologist, but also to the physician and the surgeon, the laryngologist, the ophthalmologists, and others. The most frequent varieties were: 1. Disseminated gummatous sporotrichosis, insidious of onset, and almost always discovered only by accident. 2. Disseminated subcutaneous gummatous sporotrichosis with ulceration. Adenopathies were rare and evolution was slow. The author insisted on the mixture of lesions of different appearance as one of the best clinical signs for the diagnosis of sporotrichosis. 3. Mixed forms were frequent. 4. Localised sporotrichosis, sporotrichotic chancre, lymphatic sporotrichosis, sporotrichotic adenitis; of this type, various forms were described. The characters that permit the recognition of sporotrichosis were enumerated as follows. The large number of lesions contrasting with a good general state of health; partial cup-shaped softening of a node, at first indurated, breaking down in the centre; slight ulceration, enlarging secondarily; irregular and violaceous edges, undermined, covering pus pockets; contrast between the small area of ulceration and size of gumma; coexistence of contiguous ulcerations separated by a slender bridge of violaceous skin over the same gumma; viscous pus or lemon yellow serous discharge; readiness of auto-inoculation; "cold" and indolent evolution; the cicatrisation of skin in spite of underlying abscess; smooth elastic cicatrices irregular, often denticulated, with brown pigmented area surrounding; constant absence of enlarged gland. Should these symptoms subside rapidly under iodine treatment, local and general, the diagnosis was almost certain. The author then described the bacteriological diagnosis. When the diagnosis of the disease was established recovery was, as a rule, he said, only a matter of days, but undiagnosed sporotrichosis might last indefinitely. Treatment consisted of the internal administration of potassium iodide in increasing doses up to 6 grammes (ʒiss.) a day. The local lesions should be dressed with a lotion of water 500 parts, potassium iodide 10 parts, and iodine 1 part. The ulcerated parts should be cauterised with tincture of iodine. The general treatment should be prolonged for a month after recovery. Incision of the abscess was harmful, and excision, curetting, and other surgical measures should never be employed.

Dr. J. L. BUNCH (London) read a paper on

The Treatment of Nævi based on more than Two Thousand Cases.

He discussed all the older methods, such as the cautery, electrolysis, and excision, and contrasted them with the more modern methods of radium therapy, radio therapy and refrigeration. He said that while in certain cases quite good results could be obtained by the use of radium, this method was necessarily tedious and costly, and equally good effects could be produced by liquid air and solid carbon dioxide. By these latter methods he had treated a very large number of cases, and for cheapness, rapidity, and effectiveness he considered that at present the had no equal. The duration of the application and the necessary pressure could only be judged accurately after considerable experience, but when an excessive dose was not given the resulting scar was most satisfactory, supple, and unnoticeable.

The paper was discussed by Dr. G. STOPFORD-TAYLOR (Liverpool), Dr. F. H. BARENDT (Liverpool), Dr. J. GOODWIN TOMKINSON (Glasgow), Mr. L. SAVATARD (Manchester), Dr. W. A. LOXTON (Birmingham), and Dr. MACKENNA (Liverpool), and Dr. BUNCH replied.

Dr. STOPFORD-TAYLOR then read a paper on

Types of Dermatitis Seborrhœica,

in which he said that the word seborrhœa had been responsible for much confusion of ideas. A seborrhœic skin was a greasy skin, due to a mixture of the secretions from the sebaceous and coil glands. It was a functional disorder which might be aggravated by micro-organisms, but these he considered to be secondary and not causative. The

causes were: (1) a structurally seborrhœic skin (congenital); (2) puberty; and (3) general debility or plethora. He discussed various forms of the disease, recommended soothing applications in the acute and stimulant ones in the chronic class, and related a number of cases which he illustrated by photographs.

Dr. BUNCH and Mr. SAVATARD discussed the paper, and Dr. STOPFORD-TAYLOR replied.

Mr. J. E. R. MCDONAGH (London) read a paper on

A Rational Method of Treating Syphilis.

He discussed the former methods of treating syphilis and the mode in which a cure was estimated, and concluded that from clinical evidence alone they were not, and never were, justified in pronouncing a case cured. He next criticised the conclusiveness of the Wassermann test, showing that it was not infrequently negative in the presence of indisputable syphilis as evidenced by the presence of spirochætæ, the subsequent birth of syphilitic children, &c. He supported the diagnostic method, introduced by Gennerich of Kiel and Milian of Paris, of giving a provocative injection of salvarsan, when in the presence of latent syphilis Wassermann's test, previously found negative, would frequently be found to give a positive reaction, but its limitations, he said, could not yet be definitely fixed. In the primary stage the blood should be tested 48 hours and on the fifth day after the first injection, and if positive on either occasion to repeat the test on the eighth day, and thereafter weekly until the reaction was negative on the seventh day after the last injection. Every care, therefore, should be treated as early as possible and treatment not stopped until the patient was cured, which could be said to be the case only when the Wassermann reaction was negative within a short interval of stopping treatment. The treatment required could be accurately gauged only by making examinations of the blood at frequent intervals after each injection of salvarsan.

The paper was discussed by Dr. A. RENSHAW (Manchester) and Dr. MACKENNA, and Dr. MCDONAGH replied.

FRIDAY, JULY 26TH.

Dr. J. GOODWIN TOMKINSON (Glasgow) read a paper entitled

The Vacuum Electrode in Neuro-dermatitis,

in which he highly recommended the glass electrode of low vacuum as a means of relieving the itching and of dispersing the infiltration in that affection. Dr. Tomkinson recorded several cases which he had treated, including one in which X rays and radium had previously failed.

Professor FRANK COLE MADDEN (Cairo) reported

A Case of Papilliform Lesions (Lymphangiomata?) of the Scrotum with Multiple Petechial Spots on the Trunk and Limbs.

The whole of the affected area, since all other treatment had failed, had been excised and a new scrotum was made from the surrounding skin of the thighs, perineum, and buttocks. The patient left hospital three weeks later with still a few growths on the body of the penis. The pigmented spots on the thighs, as far as the knees, with the exception of slight fading were unchanged. The microscopical examination appeared to limit the diagnosis to two pathological groups—angioma and lymphangioma, or to one or other of their many varieties. The case was submitted for diagnosis.

Dr. DAVID WALSH (London) read a paper on

Traumatic Dermatitis and other Cutaneous Lesions in Relation to Cardio-vascular Conditions.

He said that many chronic and recurrent skin eruptions were associated with heart disease, and unsuspected heart trouble was common among patients at a skin hospital. Prognosis in skin diseases was largely dependent on the condition of the heart, so that attention to the circulation was imperative in many skin affections. The circulatory inadequacy that determined the onset and duration of many chronic or recurrent skin eruptions might also affect internal organs. So-called "idiosyncrasy" might in many cases mean a pathological reaction, natural or acquired, to moderate traumatism. The irregular incidence of trade and drug eruptions might often be thus explained, the predisposition consisting merely in central cardiac inadequacy and disturbed balance of capillary circulation. In chronic skin disease or cases of delayed healing the circulatory conditions should therefore be investigated. A normal or a fully compensated circulation was essential in cases in which it was proposed to administer drugs, such as mercury or arsenic, known to be organic irritants. The delayed healing of wounds and the persistence of external or internal inflammatory conditions often afforded a very delicate clinical test of cardiac inadequacy. In short, the heart should always be vigilantly considered by the dermatologist.

Dr. G. NORMAN MEACHEN (London) had little doubt that Dr. Walsh's views were correct. He was especially interested in the observation that symptoms of heart disease might be first manifested in the skin, in the shedding of hair without obvious cause, or in the heart's failure to act normally to slight traumatism.

Dr. MACKENNA thought that research in dermatology during the past ten years had taken too exclusively a histological or bacteriological line, and the stethoscope had been used too little.

Dr. J. F. HALLS DALLY (London) showed the cardiograms of certain cases in his practice which had exhibited cutaneous disorders, probably of circulatory origin.

Dr. MEACHEN then read a paper on

A Plea for the More Systematic Study of Morbid Conditions of the Nails.

He considered nail markings in their relation to traumatism, eczema and psoriasis, parasitic affections, syphilis, trophic and other affections, and general diseases. He suggested that in every case of skin disease presenting itself for treatment the condition of the nails should be noted at the time of the examination. If this were done systematically he felt sure that interesting abnormalities would frequently be found, and that many signs of cutaneous and systemic disease would thus be discovered. The "law of symmetry"—that where a given nail is affected the corresponding nail on the other hand will be found to be also affected—and the "law of diminishing intensity"—that the horizontal furrows that form on the nails as a result of debilitating illnesses, diminish in intensity from the thumb towards the little finger—he said were applicable in all cases of nail disease except those due to injury or parasitic disease. The paper was illustrated by lantern slides.

Other papers read were: Sebaceous Carcinoma and its Relation to Rodent Ulcer, and Fibro-sarcoma on Lupus Scar Tissue, both by Mr. SAVATARD, and Xanthoma Multiplex, by Dr. W. C. ORAM (Liverpool).

DONATIONS AND BEQUESTS.—Miss Fowler, of Liverpool, has given £2000 to the Liverpool County Hospital for Children, for the purposes of endowment.—An anonymous gift of £400 has been received by the governors of the Prince of Wales's Hospital, Tottenham.—The officials of the Miller General Hospital, Greenwich, have received the sum of £400 from an anonymous donor.—Miss M. Holland, of Uplyma, who left estate of the value of £35,542, bequeathed £100 each to the Lyme Regis (Dorset) and Axminster (Devon) Cottage Hospitals, and these institutions have also a reversionary interest in £10,000.

THE HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, BROMPTON.—Special demonstrations on the Administration of Tuberculin will be given from Sept. 2nd to 7th at this hospital by members of the staff. The following is the time-table of the course:—Monday, Sept. 2nd, at 3.30 P.M., in the laboratory, Dr. A. C. Inman, on the Various Tuberculins; Tuesday, Sept. 3rd, at 3.30 P.M., in the laboratory, Dr. Inman, on the Technique of Administration of Tuberculin; Wednesday, Sept. 4th, at 3.30 P.M., in the wards, Dr. H. W. G. Mackenzie, on the Selection of Cases for Tuberculin Treatment; Thursday, Sept. 5th, at 3.30 P.M., in the wards, Dr. R. A. Young, on the Practical Administration of Tuberculin; Friday, Sept. 6th, at 3.30 P.M., in the wards, Dr. F. J. Wethered, on the Contra-indications for Tuberculin Treatment; Saturday, Sept. 7th, at 2.30 P.M., in the wards, Dr. Cecil Wall, on the Lessons to be Derived from Cases under Treatment by Tuberculin. The assistant physicians attend daily in the out-patient department at 12 noon. Those who attend the course may be present at the out-patient clinique if they so desire. The fee for the course is 2 guineas; a reduction of 1 guinea is made for those who have a current ticket for clinical practice at the hospital. Application should be made to the dean, Dr. Cecil Wall.

THE LANCET.

LONDON: SATURDAY, AUGUST 24, 1912.

The Out-patient Departments of London Hospitals.

SOME 18 months ago King Edward's Hospital Fund appointed a committee to consider and report as to the conditions under which patients are admitted to the out-patient departments of the hospitals of London. The committee has recently issued its report and it is signed by the two surviving members of its body, Lord MERSEY and the Bishop of STEPNEY. It would have been wiser if a medical man had been appointed a member of the committee, for the findings would have gained much in authority thereby, but the commissioners have shown an exhaustive and accurate appreciation of the medical aspect of the questions, and their report deserves the most careful study by all those who are responsible for the administration of the charitable relief of London. The out-patient departments of hospitals have assumed large proportions only within the last hundred years, and during the earlier decades of the nineteenth century the number of patients was small, but there has been a steady increase and now the number has become very great, until in 1910 more than one and three-quarter millions of persons attended the out-patient departments of the voluntary hospitals of London. Even when allowance is made for the fact that the same patient may attend at different hospitals or at the same hospital on more than one occasion, it is clear that it cannot be right that the number of out-patients should form such a large percentage of the population of any city, even of London, which is alike as populous as many kingdoms, and the uncomplaining refuge of the sick and miserable of all races and degrees. Also in any investigation of this subject the casualty cases must be considered with the out-patients, for the distinction between them is not always clear. The multitude of casualties and other patients which are treated in London hospitals has proved a great burden on the resources of these institutions, and any changes which will diminish the numbers without impairing the functions of the hospitals will be warmly welcomed by hospital managers.

There are several classes of patients who apply for treatment in the out-patient department who are unsuited for it. In the first place, the opinion is held very widely that many persons who are well able to pay for medical treatment attend as out-patients. It is certain that this is true, though it is probable that the proportion has been largely over-estimated, but those hospitals which have instituted a form of inquiry by almoners find that this form of abuse does exist. It must not, however, be forgotten that the ailment from which the patient is suffering must be taken into account when his suitability for treatment is being considered. Urgency and severity of symptoms are claims on the charities which must be recognised, while certain classes of obscure cases are sent to the hospitals by general practitioners, who are rightly using the out-patient departments in a consulting capacity. Otherwise it is of the greatest importance that a patient who is able to pay the fees of a medical practitioner should not be allowed to participate in the benefits of a medical charity, for by appropriating a share of these benefits he is depriving some deserving case of needed treatment, and at the same time he makes the hospital exert a harmful influence on the practice of medical men in the neighbourhood, whereas it should be a centre at which the practitioner can receive all the help and counsel he may require upon application. Provident dispensaries offer to a certain class of patient an efficient treatment for, at all events, all but the most serious diseases, and there is the further advantage that in most cases the patients of these institutions are attended at their homes when necessary. Provident dispensaries should certainly be developed. Their small payments call for thrift on the part of the patient, and they might easily be made to relieve the hospitals very greatly. Those who are receiving Poor-law relief and are not in a position to receive real benefit from hospital out-patient treatment should be as charily received at the out-patient departments as those whose means make them unsuitable subjects. Some statistics seem to show that these may form as much as 10 per cent. of out-patients. We have a system of Poor-law medical relief, and it is wrong to admit as out-patients those cases which are not in a position to profit fully by the treatment, and which are already provided with medical treatment elsewhere.

A very large section of the patients which are really unsuitable for hospital treatment comprises the trivial cases. Slight ailments and injuries can be perfectly well treated by the general practitioner, who is in many cases deprived of fees that could easily be paid, while it is a waste of the time of the hospital to devote it to their treatment. These cases are much more numerous than is usually supposed, and they cost the hospitals time and money that can ill be spared. Self-respecting persons, it might be thought, would feel ashamed to invoke the aid of the hospital for the treatment of trifles, but with many persons in large towns the habit of hospital abuse has become ingrained. A hospital should serve, as we have already said, as a consulting centre, to which the practitioners of the neighbourhood may send for an opinion as to diagnosis or treatment those of their patients who are not in a position to afford the fee of a consultant; but it is not a place where those who can pay should go in circumstances where no consultation can be necessary. The consultative function of hospitals is exercised at the present time, but it is doubtful if it is employed nearly as much as it should be. It is said that the practitioner is afraid that he may lose his patient, but there need be little risk of this if a letter stating the object of the visit to the hospital is sent with the patient. The out-patient department of a hospital used in this way serves well one of its most important functions: it helps the education

of the medical student and the advancemment of medical science. The training of the student is not only one of the duties of a hospital, it is also one of its privileges, and the presence of students in a hospital leads to an enhancement of the value of the work there carried out; so that it is important that cases suited for instruction should be admitted. No better cases can come than those where the practitioner has been himself desirous of a second opinion.

The report of the King Edward's Hospital Fund Committee gives a very lucid account of the whole subject, but the question remains, What is the best method of carrying out the reforms which will exclude from the department those cases unsuitable, and which will coöperate with other charitable agencies in the work of assisting the poor? The answer given by the report is that by the use of almoners it will be possible to accomplish much, if not all, that is required to reform the out-patient department. Many hospitals already employ almoners to some extent, but their numbers must be greatly increased if they are to carry out the work of reform. Almoners of intelligence and experience can eliminate the applications for out-patient treatment of those who are in a position to pay for advice; they can refer to provident dispensaries those who appear to be suitable; they can find out if the Poor-law patient needs something more than he can obtain from the Poor-law's ministration; and when the patient needs charitable assistance to procure food or work the almoner can put him in touch with suitable charitable agencies. The more the authorities of the hospital know of the means and chances of the persons applying for treatment, the better position they will be in to give the patients that treatment which will do them the most good. We agree with the conclusion of the report that the appointment of sufficient almoners will relieve the strain on the out-patient department, and at the same time will benefit the patients, but we are perfectly certain that the whole trouble cannot be removed in this simple way. The education of the public is also necessary, and a far closer relationship than at present exists between the general practitioners of a locality and the hospital in the locality.

The Medical Applications of Radiology.

THE scope of specialism in medicine widens almost constantly, such is the activity of research and so close is the assiduity with which abstract scientific discoveries are employed practically. Each technical advance, which becomes established by experience as useful in diagnosis and treatment, brings in its train the need for special knowledge in its application and for special training in the interpretation of the results obtained by its aid. It becomes increasingly apparent that technical specialism in medicine must be accepted and fully recognised. Within recent years the departments of pathology and bacteriology have become more and more specialised, while the new department of radiology has been evolved and has developed into a highly important branch of medical practice. Although such special departments of practice are becoming more and more technical, it is still as necessary as ever that the worker should first acquire a thorough grounding in, and general knowledge of, his profession before embarking upon the actual practice of the branch of his choice. It is true that some of the developments of modern medical science and practice require a wider and more comprehensive preliminary training than that which is necessary for the general practice of medicine; for example, the technique of radiology demands an effective knowledge of applied physics and electricity that is beyond the ordinary syllabus in these subjects prescribed in the curriculum of the medical student. This may be an argument in favour of an early decision to adopt a particular career, but it does not modify the truth of the principle that special practice should follow on general knowledge.

Not very long ago, when the X rays were first discovered by Professor ROENTGEN, together with the facts that certain tissues and substances were pervious to them while others were opaque and could therefore be shadowed upon a photographic plate, their application to the investigation and treatment of fractures of bones and to the surgical treatment of deformities was at once apparent. It is improbable, however, that even the most far-seeing of the earlier medical workers with these rays, wonderful as their possibilities appeared, could have foretold their surprising applications to the elucidation of obscure problems in anatomy, physiology, and pathology, to the exact diagnosis of deep-seated morbid conditions, and to the treatment of many forms of disease, which are now matters of common knowledge and everyday experience. The proceedings of the Section of Electro-therapeutics at the recent meeting of the British Medical Association, which are reported in this number of THE LANCET, afford some interesting and striking examples of the modern developments and applications of radiology. It will be seen that the first paper, that by Dr. A. F. HERTZ upon the normal stomach, was read and discussed before a joint meeting of the sections of Electro-therapeutics and Anatomy, in itself an interesting recognition of the scientific value of the X rays in medicine, and an illustration of what might be called the quickening spirit at present at work in the sciences ancillary to medicine. Just as the pathologist of to-day tends to deal more with the morbid anatomy of the living tissues than with the altered conditions found at necropsy, so the anatomists tend more and more to study structure in relation to function; as Dr. HERTZ happily expressed it, they have attempted to discover the anatomy of the organs as they exist in life. At first sight it seems surprising, if not almost incredible, that the X rays should be capable of giving more exact and reliable information in regard to the anatomical characters of the normal stomach than dissection after death and operation during life, but it becomes intelligible when we remember that the stomach is a muscular organ capable of distension, showing variations in form in association with its own movements and with the presence of food within its cavity, and variations in position in association with the posture of the body. The study of the stomach by the X rays after the administration of bismuth oxychloride, which does not alter the tone of the muscular coat of the stomach, has considerably modified the views previously held as to the position, shape, and relations of that organ.

Dr. HERTZ, in his interesting remarks, was careful to say that the information obtained from the X rays required correction with the aid of that derived from ordinary anatomical methods, because the shadow produced by the rays merely represented the stomach projected upon a flat surface. He explained that he had adopted the anatomical nomenclature used by CUNNINGHAM, and suggested that the term "pyloric antrum," which is now so variously applied, should be discarded. He described the stomach as being divided into a larger cardiac part and a smaller pyloric part, the former consisting of the fundus and body. The fundus is that segment of the stomach which is situated above a horizontal plane passing through the cardiac orifice, while the body is placed entirely to the left of the middle line and is nearly vertical in the erect position, though it becomes oblique in the recumbent position. The incisura angularis, a well-marked depression on the lesser curvature, separates the body from the pyloric part of the stomach, which consists of the pyloric vestibule and pyloric canal. In the empty condition the upper third of the stomach is pear-shaped and contains gas, while the rest of the organ passes to the pylorus in the form of a collapsed tube. When the stomach is partially filled with a standard bismuth meal half a pint in volume the body is almost uniform in diameter, its axis corresponding with that of the organ in its empty condition; but when the stomach is filled by a large meal it expands chiefly in the direction of the greater curvature, though the dome of the diaphragm is pushed upwards. From this very brief abstract of Dr. HERTZ's conclusions, the general accuracy of which appears to have been accepted by the anatomists who discussed his paper, it will be seen how different is the natural position of the normal stomach in the erect position in life from that which is generally represented in anatomical plates.

Dr. REGINALD MORTON read a paper on the X Ray Diagnosis of Some Forms of Arthritis, which illustrated another useful application of this agent in medicine. It is becoming more and more generally recognised that the conditions to which the names of rheumatoid arthritis and osteo-arthritis are now respectively applied are pathologically distinct, although until recently the two terms were used more or less synonymously. Dr. MORTON demonstrated the important points of difference which the X rays revealed in the changes of the joints in these two conditions, and also affirmed that the rays formed the most reliable and accurate means of diagnosis at our disposal at the present time, a conclusion it would be hard to dispute. In rheumatoid arthritis he stated that there is a narrowing of the normal spaces between the articular ends of the bones, due to absorption of the articular cartilages, while in osteo-arthritis the narrowing is much less, since the cartilaginous changes are of the nature of fibrillation and disintegration rather than absorption. Erosion of the bones is more common in rheumatoid arthritis than in osteo-arthritis, and Dr. MORTON considered that in general the latter disease is the less destructive of the two, and that there is more tendency to repair, as shown by the absence of rarefaction of the cancellous tissue, by the formation of osteophytes tending to support the joint, and by eburnation serving to compensate for the loss of the articular cartilage. This interpretation of the pathological changes in the joints in the light of the X ray appearances observed during life affords a suggestive example of the value of the rays in skilled hands; and another was supplied by Dr. A. C. JORDAN, who, at the same meeting, read a paper on "Peribronchial Phthisis," in which he claimed that pulmonary tuberculosis was in most cases primarily a disease of the hilum of the lungs and not of the apices. He further stated that in at least 40 per cent. of the cases of this disease it commenced as a peribronchial mottling, and sooner or later reached the apex by the ascending bronchioles. Dr. JORDAN'S conclusions, though suggestive, seem to us to require confirmation from the pathological side, but the observations which he recorded should lead to more careful inquiry into the site and mode of onset and spread of the initial lesions in this disease, matters about which there is at the present time great difference of opinion.

It is obvious that with constantly improving apparatus and technique X ray methods are yielding information of increasing accuracy and of more and more definite significance. The introduction of stereoscopic methods is already diminishing the difficulties of interpretation in some instances, as mentioned in an interesting paper upon this subject by Dr. C. F. BAILEY. It must, however, be apparent that radiology will tend to become more and more specialised, since not only is technique a matter of great importance, but experience in determining the best form of examination in each case and in interpreting the results obtained is absolutely essential. These things merely emphasise the necessity for an adequate grounding in general medicine and surgery for those who practise radiology, the more so that the rays are now employed in treatment and have, as is well known, proved themselves potent for harm as well as good. The progress of radiology has been such that all concerned may be proud of their achievements, carried out in the face of difficulties and danger as they have often been. The specialism has a brilliant record in its brief past history and bears the promise of great advances in the future.

THE ROYAL CORNWALL INFIRMARY, TRURO.—The annual meeting of the subscribers of the Royal Cornwall Infirmary was held on August 12th. The medical report showed that 592 in-patients, 2081 out-patients, and 1027 ophthalmic cases had been treated during 1911, being in all the numbers an increase compared with 1910. The income amounted to £2424, and there was an adverse balance of £31. 111 patients were sent to the male convalescent home at Perranporth in connexion with the infirmary. The committee state that the ophthalmic department was opened last year. The institution had to undergo some building alterations in consequence, which necessitated an expenditure of £1544, but with the exception of £91 this sum was raised by special donations. During the past year Mr. T. Dorrington bequeathed about £6500 for the erection of a convalescent home for women at Perranporth, the land for the erection of which has recently been given by Mr. J. D. Enys.

Annotations.

"Ne quid nimis."

WILD WEATHER AND THE PURITY OF THE AIR.

WILD weather has its compensations, judging from the extraordinary purity which has characterised the air of London and other populous cities during this remarkably inclement season. It is not often that ozone is demonstrated in London air so plainly as has been the case recently. Last Saturday in particular London air was positively charged with ozone which could be detected by its peculiar smell, and the starch iodide paper rapidly turned blue when exposed for a few moments to the fresh breeze. There have been abundant manifestations lately of difference in electric potential, and electric discharge has, no doubt, furnished the ozone, although the rapid passage of water through the air—a dreary sight with which we have all become too familiar—may lead, there is reason to believe, to some amount of ozonisation of the oxygen. The presence of ozone in air is an indisputable sign of a high degree of organic purity, for ozone is rapidly destroyed by easily oxidisable matters. Again, the carbon dioxide in the air of the metropolis during this inclement season has steadily kept at normal, about, that is to say, 4 parts per 10,000. It may easily reach 6 in stagnant weather, while in fog it sometimes rises to 11 or even 14 parts per 10,000 parts of air. The increased amount of carbonic acid gas probably causes no inconvenience to the health, but it connotes the presence of impurities which are deleterious. Assuming the temperature and the degree of humidity to be agreeable, pure air in constant movement favours a feeling of well-being, removes depression, and promotes a sense of activity. Continuous wet is of course disagreeable, but the *ennui* often engendered by the steady summer condition, the uninterrupted blue sky, the blazing sun, vanishes under the influence of fresh breezes, bright intervals, and cloud. Diarrhœa, the summer disease which contributes most to a high infant mortality, has spared many lives this year, according to the vital statistics. Everyone is sorry that in so many instances the inclement weather has spoiled so much pleasure, and the prospects for farmers are very gloomy; but it is well to remember that at all events there is no evidence that the wild weather of this summer has unfavourably affected the public health—on the contrary, there are directions in which it can be shown that an improvement has been scored.

GENERAL AND INDIVIDUAL MEDICAL CARE FOR SCHOOL CHILDREN.

IN public medicine attention to the general needs affecting all is even more important than that to the particular requirements of individuals. This reflection is suggested by a very sensible letter in the *Yorkshire Herald* of August 8th, from a correspondent who speaks of herself as a working man's wife. She points out that the individual care respecting their health given to children under the education authorities is likely to be rendered nugatory if the children have to wade through, and perhaps stand in, pools of water at the entrance to the schools waiting for the door to open. As regards the merits of the particular case quoted by the writer, we are not, of course, in a position to judge. Allowance must be made for the accidental conditions caused by the unusually wet season. After a heavy downpour, pools of rain water will collect for a while, but with proper arrangements to carry the water off they should quickly subside. If such arrangements are lacking it is at least as important that the defect should be remedied and numbers of children thus be spared frequent exposure to a predisposing cause of disease, as that certain individuals should have their constitutional condition looked into. Careful attention to the individual school child is surely only a part of the duty devolving on medical officers of schools. This must not, however, be construed into a reflection on the particular medical officer in the case of the school referred to by the correspondent, for it may be assumed that the condition was the consequence of abnormal conditions and could not have been guarded against. If otherwise, then the recommendation of the medical officer would doubtless produce the desired effect if duly transmitted to the responsible authorities.

PITUITRIN IN LABOUR.

THE obstetrician has long felt the want of some reliable drug to employ in cases of inertia of the uterus to increase the force of the uterine contractions and to avoid the necessity for the use of instruments. The action of ergot or its preparations is too uncertain, and indeed too liable to be followed by tonic contraction of the uterus, to render its employment justifiable, and the administration of quinine, which has been lauded by some, is in most cases followed by no good results. In the extract of the pituitary gland in the form of pituitrin we seem, however, to possess a drug which undoubtedly does act upon the uterus, which in the majority of cases gives rise to no bad results either to the mother or the child, and which may be safely and on the whole certainly used to stimulate uterine contractions and to hasten the termination of labour. Many obstetricians have obtained striking results by the administration, subcutaneously or by intramuscular injection, of doses of 1 c.cm., corresponding to about 0·2 gr. of the fresh gland substance. The results of a considerable number of cases treated in this way have now been published, and we are in a position to draw certain conclusions and to determine in what class of case the drug should be employed and what effects are likely to follow its use. It seems certain that in the early months of pregnancy it has but little effect upon the uterine contractions and that it will not initiate them. It is of very little use, therefore, in cases of abortion. In the later months, and especially during labour, however, its effects are much more certain and striking. An injection of 1 c.cm. in a case where the uterine contractions are ineffective is frequently followed in from 5 to 15 minutes by the occurrence of well-marked pains, and these tend to return at frequent intervals for some considerable time, after which the effect gradually wears off. The repetition of the injection, however, usually brings about a return of the pains, and as much as 3 to 5 c.cm. may be given in any one case. The injections appear to act best in the latter part of the second stage of labour, but are also effective in the first stage if there is some dilatation of the cervix present. Cases have also been recorded in which the administration of pituitrin has been followed by the onset of labour, and it has been used successfully for the induction of premature labour. In a series of cases in which the action of the drug was investigated by Professor Westermark's apparatus, which records graphically the strength of the uterine contractions in millimetres of mercury, the duration of the pains and that of the intervals between them, it was found that after an injection of pituitrin the pains became shorter and stronger, while the intervals also became shorter and the intra-uterine pressure was raised. From these results it has been suggested that a large dose might cause tetanic contraction of the uterus and endanger the child's life. Such an unfavourable result has, however, not been observed, and the use of the drug does not appear to entail any danger either

to the mother or the child, provided that it is not given in too large doses. No toxic effects have been noticed either before or after labour. In cases in which some little time has elapsed between the administration of the drug and the completion of the third stage there appears to have been a tendency to uterine inertia, but this can be obviated by the plan of administering with it a small dose of one of the preparations of ergot. On the whole, pitutitrin appears to be the most reliable means we possess for the strengthening of the contractions of the uterus during labour, and if carefully employed it should prove useful in a very large number of cases of inertia of the uterus. It should also have a favourable effect upon the morbidity rate, inasmuch as its employment will certainly lessen the number of cases of forceps operations in midwifery practice.

"THE SLEEPER OF OKNÖ:" COMPLETE CURE AFTER 32 YEARS OF STUPOR.

SOME years ago the Swedish press was greatly taken up with the case of "the sleeper of Oknö," a woman who in April, 1908, suddenly awakened from a condition of lethargy and stupor which had lasted some 32 years, and who was hailed as having been "miraculously" cured. No careful medical or psychological study of the case was made at the time, but towards the end of 1910 the management of the newspaper *Stockholmstidningen* deputed Dr. Harald Fröderström, of Stockholm, to investigate the case independently, and an account of the curious facts and somewhat mysterious circumstances surrounding it has been published by him in the *Nouvelle Iconographie de la Salpêtrière*. Caroline Olsson was born on Oct. 29th, 1861, in Oknö, a small island off the east coast of Sweden. No definite information as to neuropathic diathesis or psychic anomaly in the family history is forthcoming. Apparently Caroline passed a perfectly normal infancy and girlhood up to the age of 14. Owing to certain difficulties in the way, however, she did not attend school until a few months before she fell ill, some time about Christmas 1875. One day, on her way home from school, a distance of some five kilometres, she was unaccompanied by her brothers who had remained behind for some reason, and on reaching the house she complained of toothache and of malaise, and was put to bed. In the course of a very short time she fell into a state of profound stupor, not speaking a single word, and remaining completely insensitive to the stimulus of a pin-prick, and in this state she continued for 32 years. In spite of the fact that popular credence attached importance to her coming home alone and to idle tales of something having "touched" her, Dr. Fröderström could obtain no evidence of this really having been the case. The patient had not menstruated prior to the onset of the illness. Her mother, who died in 1905, looked after her at home up to this date, and during these 30 years Caroline never said a single word, except when her mother once in desperation besought her to pray, and the patient said, "Kind Jesus, have pity on me." Some three or four times she was known to have left her bed momentarily during that period: otherwise she remained huddled up in bed, with the clothes drawn over her head. Her mother gave her apparently never more than two cups of milk in the 24 hours, although it would seem that the two were often left alone for hours at a time, the male members of the family being out at work. When Caroline was told that her mother was dead, she burst into tears, but otherwise her condition remained exactly as before. Two years later, in 1907, the brother who had been deputed to feed her, as the mother had done, was accidentally drowned; on hearing of this the patient again had a violent outburst of tears. Then a housekeeper was obtained, and this person, who seems to have been a woman of considerable intelligence, began to notice some curious facts about the case. Thus, she often remarked that objects in the patient's room were changed from place to place; she noted that the patient's linen was never soiled with dejecta or otherwise, that her nails were never beyond the normal length, that her person was not dirty, that her hair was never untidy. As Caroline was always left alone for some hours in the middle of the day, it was felt that she was doing much more for herself than had hitherto been imagined. At last the housekeeper came to realise that the patient was finding difficulty in keeping up her nourishment, for food disappeared from cupboards in a mysterious way. Eventually, on April 3rd, 1908, the patient suddenly said, "Where is mother?" and when her brothers came into her room in astonishment, she said, "You are not my brothers; they were so small." Yet, curiously enough, she did not show any surprise at seeing the housekeeper in the room. From that day the patient's condition became perfectly normal, and it has remained so ever since. Apart from complete amnesia for the events of 32 years, Caroline does not differ in any way from the normal individual. Dr. Fröderström subjected her to a careful neurological and psychological examination, without finding any trace of disease or of psychical defect. She remembered the events of her childhood perfectly, but was very unwilling to talk about her illness. It is not without interest to note that the period of it, from 14 to 46, corresponds closely to the average reproductive period of the female in the northern Germanic races. Dr. Fröderström is of opinion that the case is one not of hysteria but of catatonic stupor, though he admits it is difficult sometimes to distinguish between the two. The element of simulation which entered into the case strongly, seems rather in favour of the former diagnosis. The suggestion is made that the awakening or reawakening of the instinct of self-preservation, as the result of the mother's death, was the step that led eventually to the complete recovery of the patient.

OPEN ETHYL CHLORIDE ANÆSTHESIA.

IN a pamphlet we have received from Mr. R. W. Hornabrook, of the Melbourne Hospital, attention is drawn to the advantages of using ethyl chloride upon an open mask. The pamphlet is entitled "Open Ethyl Chloride Anæsthesia," but a great many of its pages are actually taken up by remarks upon open ether anæsthesia which provide no new information or occasion for comment. Mr. Hornabrook has views upon the desirability of keeping the head and shoulders slightly raised during the induction of anæsthesia, views which are more laudable than those of the sentences with which he supports them. "I am not a believer in the question that the head low is even scientific; I think it is quite the contrary," is a type of sentence which should not be allowed to escape from the hands of any writer who wishes to be understood and believed. We consider that the use of ethyl chloride upon an open mask is often highly advantageous, and that the merits of such a practice are not so generally recognised as they might be, and for that reason we are glad to record Mr. Hornabrook's work. In most of the text-books on anæsthesia the use of ethyl chloride in this way is barely alluded to, though we have reason to believe that the practice is often resorted to by more than one of the leading anæsthetists in London. It is, of course, as a very convenient, safe, pleasant, and rapidly acting precursor to ether that ethyl chloride is most often used on an open mask, and Mr. Hornabrook describes a sensible method of securing the gradual administration of the ethyl chloride. He uses a "kelene" tube with a lever which can be so propped up by a small piece of cotton-wool as to allow the ethyl chloride to escape by drops

instead of in a stream as is usually the case. So far as we are aware, none of the ethyl chloride tubes commonly used allow of this drop administration, and it is this inability to drop the ethyl chloride upon the mask while it is over the patient's face that leads to disuse of the drug in many cases where it might be employed with advantage in the early stages of induction of anæsthesia.

THE LIMIT OF ARSENIC IN OFFICIAL SUBSTANCES AND PREPARATIONS AND ITS DETERMINATION.

THE General Medical Council has published a supplementary report of the Committee of Reference in Pharmacy to the Pharmacopœia Committee of the Council which sets out "the most suitable limit test for arsenic in official substances and preparations, and the limits for arsenic that may reasonably be adopted." The limits have been adopted by the committee and are now recommended for introduction into the Pharmacopœia. The question has received very thorough investigation at the hands of Mr. C. A. Hill, a member of the Committee of Reference, who, in fact, compiled the report at the committee's request, the results being based upon a series of experiments extending over several years. The report embraces a complete series of requirements and tests for controlling the limit of arsenic to be allowed in official substances and preparations, and includes specifications and details for the apparatus and requisite reagents. The apparatus is simple in construction and inexpensive, and is such as any qualified pharmacist can easily make and use, while no great expenditure of time or skill is required, and the results are stated to be trustworthy and quite sufficiently delicate for the object in view. The test adopted is the Gutzeit test, which depends upon the formation of arseniuretted hydrogen from the substance under examination and the reaction of that gas with mercuric chloride producing a yellow colouration, the intensity of which is proportional to the amount of arsenic present. Full directions are given as to the construction of the apparatus and the preparation of the reagents (hydrochloric acid, sulphuric acid, nitric acid, stannous chloride, bromine solution, arsenic solution, zinc, potassium chlorate, calcium hydroxide, citric acid, stannated hydrochloric acid, and brominated hydrochloric acid) all marked A.T., which means that they are standardised for the purposes of the test. A standard stain is obtained by employing in the test a definite amount of arsenic (A.T.) solution. The tests that follow in regard to official preparations must give a result not exceeding in intensity this stain when the quantities directed to be taken for the test are employed in the manner described. The permissible amounts of arsenic in the various substances enumerated vary from 0·2 part (liquor magnesii carbonatis) to 1000 parts per 1,000,000 (antimonii oxidum). The limits are for the most part between 2 and 10 parts per 1,000,000. The report bears the stamp of authority, and will no doubt be favourably received, since a uniform official standard test is obviously desirable.

POISONING FROM THE USE OF OIL OF CAMPHOR IN THE PERITONEUM.

THE treatment of cases of purulent peritonitis is often most disappointing in its results, and any method which promises to lower the mortality from this dread complication of abdominal surgery is to be welcomed. For some little time now surgeons on the continent and elsewhere have been introducing a sterilised solution of oil of camphor into the peritoneal cavity at the time of operation for the purpose of preventing the onset of peritonitis in cases where the peritoneal cavity is either infected before or during an operation. The oil has been used in various strengths containing from 1 to 10 per cent. of the drug, and in amounts from 30 to 300 c.cm. Very striking results have been obtained; thus Kolb records 79 cases treated in this way, of which 53 were so-called septic cases, with only one death from peritonitis. Cases of acute general septic peritonitis also have been treated successfully by this method. In view of the fact that camphor is now used for this purpose in a considerable number of cases by different surgeons, a death from poisoning by this drug recorded by Dr. Rübsamen from Professor Kehrer's Clinic[1] is of considerable interest. In this case after an operation for the removal of an intraligamentary ovarian cyst and of the uterus which was adherent to the bowel, 170 c.cm. of a 10 per cent. solution of oil of camphor was introduced into the peritoneal cavity as a prophylactic measure. The peritoneum was sewn over the vagina which was tamponed and the abdomen closed. At the end of the operation the pulse-rate was 130 per minute, and it remained rapid in spite of treatment. At noon of the next day the pulse was irregular and its rate 160 per minute. The patient now became very restless and delirious with hallucinations and fears of impending death. In an unguarded moment she got out of bed and attempted to commit suicide. The pulse became weaker and more irregular in spite of the injection of caffeine, digalen, and musk, and the patient died 55 hours after the operation with all the signs of heart failure. The post-mortem examination showed no signs of sepsis, and Dr. Rübsamen came to the conclusion that the cause of death was acute camphor poisoning. The main symptoms of this are excitement, continual desire for movement, headache, buzzing in the ears, dimness of vision, delirium, vertigo, and hallucinations. In the worst cases somnolence, paralysis of the bladder and rectum, coma, and death occur. Convulsions are not uncommon, and sweating and polyuria have been noticed. The respiration is quickened during the stage of excitement and later slowed. In some cases the excitable stage does not occur. The dose of the drug usually recommended to be given to adults is from 0·10 to 1 gramme, or from 100 to 300 c.cm. of a 1 per cent. solution of the oil for introduction into the peritoneal cavity. In Dr. Rübsamen's case the patient probably received a dose of as much as 17 grammes. If this method of treatment is to be generally adopted, in view of this unfortunate case it would seem safer to employ a 1 per cent. solution of the oil and not a 10 per cent. solution, and of the former not more than 300 c.cm. should be introduced into the peritoneal cavity.

THE inaugural meeting of the newly formed section of ophthalmology of the Royal Society of Medicine will be held on Wednesday, Oct. 23rd, at 8.30 P.M. All registered medical practitioners are eligible as members of this section. The council of the society has resolved to offer special terms to new members of this section who also become fellows of the society. These terms can be obtained on application to the secretary of the society. Only those whose applications for either fellowship or membership have been received on or before Oct. 5th, and have been accepted by the councils of the section and of the society, will be qualified to take part in the inaugural meeting.

WE understand that the International League for the Study of Epilepsy will meet at Zürich on Sept. 6th and 7th. The first meeting will take place at 9 A.M. on Sept. 6th in the Swiss Institute for Epileptics.

[1] Zentralblatt für Gynäkologie, No. 31, 1912, p. 1009.

THE TOXIC FACTOR IN TOBACCO.

RECAPITULATION.—NICOTINE IN TOBACCO, AND THE PROPORTION PRESENT IN THE SMOKE OF THE CIGARETTE, CIGAR, AND PIPE.

IN a previous article[1] attention was drawn to the amounts of nicotine found in pipe tobacco, in the cigar, and in the cigarette by a method of analysis there described. It was shown that usually pipe mixtures contain the largest amount of nicotine (2·04–2·85 per cent.), that Egyptian and Turkish cigarettes come next with 1·38–1·74 per cent., Virginian cigarettes 1·40–1·60 per cent., British cigar 1·24 per cent., and Havana cigar 0·64 per cent. Tobaccos used for blending purposes such as perique and cavendish contained as much, however, as from 4 to 5 per cent. of the alkaloid.

Next some experiments were made as to the proportion of the total nicotine which reached the mouth of the smoker by the three methods in vogue. It was found that the cigarette, whether Egyptian, Turkish, or American, yielded the least amount of its total nicotine to the smoke formed; the pipe yielded a very large proportion (in some cases 70 to 80 per cent.) of its nicotine to the smoke reaching the mouth of the consumer; and the analysis of cigar smoke gave figures midway between the two. From the point of view of nicotine poisoning, therefore, assuming that equal amounts of tobacco are smoked, the cigarette would appear to be the least harmful form of smoking and the pipe the worst, the cigar occupying an intermediate position in this respect, judging from the amount of nicotine contained in the smoke therefrom.

It must be admitted, we think, that this order of harmfulness in connexion with the smoking habit is not, generally speaking, in harmony with practical impressions, for cigarette smoking is very commonly held to be the most, and the pipe the least, pernicious form of the practice. Nor is the cigarette smoker alone in carrying the habit to excess, for although he may smoke a considerable number of cigarettes through the day, the patron of the pipe is seldom content with one "fill" in the same period, and, moreover, a pipe full of tobacco may represent the weight of the tobacco contained in four or five cigarettes. Further, there is often a greater waste of tobacco when the cigarette is smoked than is the case with the pipe, for the pipe may be smoked nearly to finishing point, while the cigarette is often discarded when only two-thirds of its length has been smoked. Assuming, however, that identical amounts of tobacco are consumed in all three forms of smoking, the smoker of the pipe, it would seem, runs the greatest risk of nicotine poisoning, because a far greater proportion of the alkaloid occurs in pipe smoke than in cigarette or cigar smoke. Since, however, practical observations lead to an opposite view, we may be led to suspect whether nicotine is, after all, the potent toxic factor in tobacco smoking which it is generally represented to be. Instances have been quoted, at all events, in which toxic symptoms appeared in juvenile smokers, whose choice of something to smoke was limited to a piece of cane, which, of course, contained no alkaloid at all. In such a case we cannot look to nicotine for an explanation of the poisonous effects, which must be due to certain products of combustion, to the absorption of which symptoms of poisoning may be traced; and similar products are found in tobacco smoke in amounts far exceeding the proportion of nicotine.

FURFURAL OR ALDEHYDES IN TOBACCO SMOKE—CIGARETTE, CIGAR, AND PIPE.

Amongst these we find is furfural, and curiously enough this irritating substance is commonly distinctive of the smoke from the cheaper kinds of Virginian cigarette. It is present also in very minute amount in the smoke of the Turkish cigarette, while in most cases it is completely absent in the smoke from the pipe and cigar. Furfural, of course, belongs to the class of bodies known as aldehydes, which are decidedly pharmacologically active, giving rise on administration to very disagreeable effects. To aldehydes the poisonous effects of crude, immature whisky are ascribed, although they occur in relatively small quantity, but the furfural contained in the smoke of only one Virginian cigarette may amount, according to our experiments, to as much as is present in a couple of fluid ounces of whisky. It would be premature at this stage to assert positively that furfural is accountable for the ill-effects of excessive cigarette smoking, but it is at least a significant fact that it is always present in the smoke of the cheap and popular American cigarette, while it is only a traceable constituent of pipe smoke and is practically absent in cigar smoke or that produced in the Turkish or Egyptian cigarette. Its formation possibly coincides with the production, also of other aldehydes, while carbon monoxide is another poisonous constituent. Aldehydes, of which furfural is a type, are pungent substances, and cause an irritant action upon all mucous membranes, and it is remarkable that throat troubles are commonly associated with cigarette smoking and not with the pipe or cigar. The injurious action would be enhanced by the rapid absorption which takes place on inhalation. These considerations seemed to us to make it worth while to examine tobacco smoke from cigar, pipe, and cigarettes respectively with regard to the amount (if any) of furfural in it, and accordingly we submitted to test a number of specimens of familiar brands of cigarettes, cigars, and pipe tobacco purchased in the open market. The results are presented in the accompanying table, in which not only is the furfural recorded but also the amounts of nicotine in the original tobacco, and in the smoke obtained therefrom, as well as the alkalinity of the smoke returned in terms of ammonia (NH_3).

It will be seen from these results that in pipe smoke the furfural varied from 0·004 per cent. to 0·030 per cent. of the weight of the tobacco smoked; in cigar smoke it was absent altogether; in the smoke of Turkish and Egyptian cigarettes it only amounted to 0·01 per cent.; while in the smoke of Virginian or American cigarettes the amount ranged from 0·04 per cent. to as much as 0·160 per cent. of the weight of the tobacco smoked. Of the 13 examples of Virginian cigarettes examined five showed 0·1 per cent. and over, and four yielded 0·08 per cent. and over of furfural. The rest gave figures close to 0·040 per cent. It is remarkable that the smoke which proved most pungent or irritating in the Virginian cigarettes invariably showed the largest proportion of furfural, and these also were, generally speaking, the cheapest in the series examined. The cheapest cigarette is nearly always Virginian tobacco. It is remarkable also that the Turkish cigarettes yielded practically no furfural, and on the whole we think that the general opinion of cigarette smokers is that Turkish tobacco yields a less irritating, a softer, and more aromatic smoke (though this aroma may not be liked) than the Virginian cigarettes. They give, however, a higher proportion of nicotine in the smoke than do most of the Virginian cigarettes examined, while the nicotine in the smoke of the pipe and cigar is far greater than either.

THE INCOMPATIBILITY OF ALDEHYDES WITH AMMONIA BASES.

It is interesting to compare the yield of furfural in the smoke of pipe, cigar, and cigarette with the corresponding yield of bases which may be regarded as bodies of the ammonia type. Generally speaking, furfural and ammonia do not occur simultaneously in tobacco smoke; when furfural is present ammonia is usually absent, and *vice versâ*. Thus the Virginian cigarette yields the least ammonia and the least nicotine, but the most furfural. Cigar smoke yields no furfural at all to speak of, but the amount of ammonia is relatively high. The pipe gives in general a small quantity of furfural but a decided quantity of bases in the shape of ammonia and nicotine. Now, ammonia and aldehydes are antagonistic; ammonia is the antidote, so to speak, to aldehydes, for it forms with them an innocuous compound. The pharmacological action of aldehydes is said to depend upon their combining with the amido groups of the protein molecule. It is a fair presumption, therefore, that (1) when tobacco yields an excess of ammonia or bases any aldehydes formed would be neutralised, and (2) that, on the other hand, when the tobacco does not furnish aromatic basic compounds aldehydes may pass to the smoker's respiratory apparatus raw and unchanged. In the first category may be placed the pipe, cigar, and probably Turkish or Egyptian cigarettes, and in the second the Virginian cigarettes, and especially the cheaper kinds. Another interesting consideration is the enhanced formation of aldehydes which may be brought about by the addition to the tobacco of sweetening agents—glycerine, oils, and the like—in the course of manufacture. It is obvious to the

[1] The Toxic Factor in Tobacco, THE LANCET, April 6th, 1912, p. 944.

chemist that the presence of sugar, glycerine, or oil in tobacco would encourage the production of irritating aldehydes during the destructive distillation of the tobacco. The manufacturer may have good reasons for adding these compounds to tobacco, but the process may, likely enough, give rise to fresh toxic factors in tobacco smoke. On the other hand, he may be alive to this possibility and add correctives in the shape of nitrates, ammonia, or other basic substances to defeat the irritating property only, perhaps, to develop others which, while free from "bite," may have toxic effects not referable to tobacco at all.

GENERAL CONSIDERATIONS.

Finally, it is a remarkable fact that in the countries in which laws exist for the prohibition of juvenile smoking the cheap Virginian cigarette is popular—for example, Great Britain and the United States; whereas in those countries where there are no restrictions at all—in Turkey, Egypt, Russia, and so on—where smoking is indulged in to great excess from the cradle to the grave—the tobacco known as Turkish or Egyptian (they are both Dubec tobacco) is first favourite. Yet both Virginian and Dubec tobaccos present very little difference, if any, in regard to the amount of nicotine which they furnish, but the smoke they yield has widely different properties, and to take only one constituent, aldehyde—a common product of the destructive distillation of vegetable tissues—occurs only in minute quantity in the smoke of the Turkish or Egyptian cigarette, but it appears in distinctly measurable quantities in the smoke of the Virginian cigarette. Considering, again, the great nations which universally use the pipe—the Dutch, the Boers, the Germans—some of the classes amongst which are seldom without a pipe in their mouths all day, or the cigar-smoking people of the Latin countries, the Spaniards, the Italians, the Brazilians, and so forth, we find a form of smoking which reduces the formation of aldehyde to a minimum, while the absorption of nicotine must be considerable. In short, in these instances the narcotic poison nicotine prevails, while the irritant aldehyde is virtually absent. It is tempting to place an interpretation upon these results which would regard the question of the harmfulness of excessive smoking in a new light. The presence, at any rate, of aldehydes in the smoke of the Virginian cigarette, which is so often smoked to excess, accompanied at the same time by an almost insignificant amount of nicotine, gives material for reflection when approaching the broad question of the evils of the cigarette habit. Furfural, the principal aldehyde which we have found present in marked quantities in the cigarette smoke of a very popular tobacco, is stated to be about 50 times as poisonous as ordinary alcohol,[2] and small doses cause "symptoms of transient irritation, such as ataxia, tremors, and twitching," while in adequate quantities furfural "gives rise to epileptiform convulsions, general muscular paralysis, ending in paralysis of the respiratory muscles." Again, "one of the commonest effects of over-indulgence in tobacco is a chronic inflammation of the throat and upper parts of the respiratory passages leading to hoarseness and excessive secretion of the mucous gland. This is explained by the constant application to the throat of an irritant alkaline vapour, and is probably not due to the specific action of nicotine; ..... it seems doubtful whether the nicotine ordinarily absorbed really has any action whatsoever."[3]

It follows from a consideration of the authoritative statements alluded to that furfural is an undesirable constituent of tobacco smoke, and there is a probability that the least harmful tobacco will turn out to be that which yields a minimum of, or no furfural at all, or any other aldehyde in the smoke of its partial combustion.

Table Showing the Amounts of (1) Nicotine in Tobacco Leaf and in the Smoke of the Cigarette, Cigar, and Pipe; (2) the Proportion of Ammoniacal Bases in the Smoke of the Cigarette, Cigar, and Pipe; and (3) the Quantity of Furfural in the Smoke of the Cigarette, Cigar, and Pipe.

Description.	Price.	Weight of one cigarette in grains.	Nicotine in 100 parts of tobacco leaf.	Nicotine in tobacco smoke from 100 parts of leaf.			Alkalinity of smoke in terms of ammonia (NH_3) in 100 parts of leaf.			Furfural in tobacco smoke yielded by 100 parts of leaf.		
				Cigarette.	Pipe.	Cigar.	Cigarette.	Pipe.	Cigar.	Cigarette.	Pipe.	Cigar
Vichand Virginian Cigarettes (C.S.S.A.)	1s. 3d. per 25.	22·65	1·40	0·12	0·74	—	0·07	0·42	—	0·098	0·070	—
Tobacco Bloom Cigarettes (Rutter's)...	5d. per 10.	17·70	1·60	0·06	0·60	—	0·05	—	—	0·064	—	—
Woodbines (Wills')	1d. per 5.	12·00	1·68	0·33	—	—	0·12	—	—	0·040	—	—
Weights (J. Player)	1d. per 5.	10·80	1·70	0·44	—	—	0·07	—	—	0·088	—	—
Navy Cut, Mild (J. Player)	4½d. per 12.	18·00	1·46	0·28	—	—	0·15	—	—	0·160	—	—
Waverley (Lambert & Butler's)	3d. per 10.	16·65	1·56	0·16	—	—	0·16	—	—	0·100	—	—
Three Castles (W. D. & H. O. Wills) ...	4d. per 10.	18·00	1·52	0·10	—	—	0·14	—	—	0·088	—	—
Myrtle Grove (Taddy & Co.'s)	3d. per 10.	18·00	1·68	0·16	—	—	0·16	—	—	0·114	—	—
Navy Cut, Medium (J. Player)	3d. per 10.	16·65	2·02	0·36	—	—	0·12	—	—	0·114	—	—
Gold Flake (W. D. & H. O. Wills) ...	3d. per 10.	16·65	2·60	0·08	—	—	0·14	—	—	0·160	—	—
State Express (Ardath Tobacco Co.) ...	6d. per 10.	16·65	2·16	0·16	—	—	0·09	—	—	0·061	—	—
Abdullah (Abdullah Co.)...	6½d per 10.	16·65	1·00	0·64	—	—	0·06	—	—	0·080	—	—
Black Cat (Carreras)	3d. per 10.	16·65	1·28	0·56	—	—	0·26	—	—	0·040	—	—
Vichand Turkish (C.S.S.A.)...	1s. 10d. per 25.	23·10	1·38	0·51	—	—	0·06	—	—	0·010	—	—
Le Khedive, Egyptian (Ed. Laurens)	1s. 6d. per 25.	15·00	1·74	0·21	—	—	0·15	—	—	0·010	—	—
Rio Novo, Brazilian...	8d. per 20.	12·45	2·77	0·52	—	—	0·40	—	—	0·014	—	—
Havana Cigar	1s. 5d. per 5.	42·00 (cigar)	0·64	—	—	0·20	—	—	1·13	—	—	*Nil.*
British Cigar	9d. per 5.	58·95 (cigar)	1·24	—	—	1·03	—	—	0·63	—	—	*Nil.*
Glasgow Mixture (Smith's)	10d. per 2 oz.	—	2·85	0·25	2·20	—	—	1·50	—	—	0·020	—
Tortoiseshell Mixture (Churchman's)	10d. per 2 oz.	—	2·81	—	1·53	—	—	0·60	—	—	0·030	—
Craven Mixture (Carreras)	1s. 3d. per 2 oz.	—	2·04	—	0·23	—	—	0·09	—	0·030	0·024	—
Perique...	1s. 4d. per 2 oz.	—	5·30	0·57	1·28	—	0·07	1·53	—	—	0·004	—
Cavendish, Coarse Cut	8d. per 2 oz.	—	4·15	—	3·25	—	—	0·12	—	—	0·014	—
Latakia...	10½d. per 2 oz.	—	2·35	—	1·20	—	—	1·48	—	—	—	—
Caporal...	11½d. per 50 grm.	—	2·60	0·95	2·20	—	0·25	0·90	—	0·001	0·014	—
Caporal, Non-nicotine	—	—	0·60	0·39	0·48	—	0·05	0·86	—	—	0·010	—

[2] Concerning Certain Apparently Injurious Constituents of Potable Spirits, by Sir Lauder Brunton, M.D., F.R.S., and F. W. Tunnicliffe, M.D., THE LANCET, Dec. 8th, 1900, p. 1643; and a further article by the same authors, THE LANCET, June 7th, 1902, p. 1591.

[3] A Text-book of Pharmacology and Therapeutics. By Arthur R. Cushny, M.A., M.D., F.R.S. Fifth edition. London: J. and A. Churchill. 1910. P. 280.

PRELIMINARY REPORT ON

THE FORCIBLE FEEDING OF SUFFRAGE PRISONERS.

BY AGNES F. SAVILL, M.D. GLASG.;
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AND
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Danger and Pain.

IT has been stated by the Home Secretary that the practice of forcible feeding is unattended by danger or pain. We have carefully considered the written statements of 102 of the suffrage prisoners, of whom 90 have been subjected to the operation of forcible feeding; we have personally examined a large number of these prisoners after their release, and we have communicated with the physicians who have attended those prisoners whose condition on release necessitated medical care. The facts thus elicited give the direct negative to the Home Secretary's assertion that forcible feeding as carried out in H.M.'s prisons is neither dangerous nor painful. We are confident that were the details of the statements we have read and cases we have examined fully known to the profession, this practice, which consists in fact of a severe physical and mental torture, could no longer be carried out in prisons of the twentieth century.

Forcible feeding has been carried out by nasal and by œsophageal tubes, and by the feeding-cup. The feeding-cup method is frequently forcibly administered solely by the wardresses, without the supervision of a qualified medical practitioner. In the majority of cases the feeding has, on principle, been resisted to such a degree that two doctors and four to six wardresses are required for each operation, and in several instances the officials were held at bay for periods varying from ten minutes to over an hour. But it is to be observed that even in many cases where no resistance was offered, great pain was experienced under the operation. In these circumstances it is not surprising that many prisoners state that after one operation of forcible feeding they experienced more serious symptoms and pain than after several days' starvation. One prisoner we examined (K. M.), a strong woman of fine physique, was so seriously injured by only one feeding that she had to be removed to hospital after it, and she is but typical of a considerable number.

The suffrage prisoners, it should be noted in passing, have never hunger-struck to shorten their sentences, but only to obtain equality of prison treatment for prisoners convicted of like offences, and for justice in observance by the prison officers of the prison rules, especially 234*a* granted by Mr. Churchill when Home Secretary, but withheld for some time or in part by Mr. McKenna.

According to the Home Secretary, forcible feeding was instituted by him to keep the suffrage prisoners in health and also to prevent them bringing about remission of their sentences, for which, however, they have never hunger-struck. But in the large majority of the cases it has had precisely the opposite effect. Mr. Ellis Griffith admitted in the House of Commons that on one day (June 26th, 1912) from three prisons (Holloway, Maidstone, and Winson Green, Birmingham) no fewer than 22 prisoners had to be released and placed under the care of their friends in order to save their lives. Again, at the commencement of the hunger-strike 12 prisoners were immediately released upon whom forcible feeding was never attempted because the doctors of the prison were afraid to risk the operation upon them. Further, out of a total of 102 cases of prisoners who joined in the hunger-strike we have investigated, 46 were released long before the termination of their sentences because their health had been so rapidly reduced as to alarm the medical officers. In many cases the forcible feeding with the nasal or œsophageal tubes had been carried so far that the condition of the prisoners was so enfeebled thereby as to compel the authorities to release them under the care of a special attendant who accompanied them to their homes and remained with them until the assistance of their friends could be obtained. It is, therefore, not correct to say, as the Home Secretary did in the House of Commons, that he ordered this forcible feeding in order to preserve the health of his prisoners.

No Danger to Life or Health when Prisoner does not Resist.

The Home Secretary, further, has repeatedly stated (see especially Hansard, May 20th, 1912): "There is no danger to life or health from the process of feeding by tube. Where there is any danger it arises from the violent resistance sometimes offered by the prisoners." And Mr. Ellis Griffith stated in reference to a particular case: "If she suffered any pain it was due entirely to the violent resistance she offered to what was necessary medical treatment."

These statements are not borne out by our investigations. One example out of several will suffice to illustrate this point:—

M. F., a skilled trained nurse, never resisted the operation. At Easter she was fed twice daily for eight days. The pain endured surpassed that of any nasal operations she had undergone in previous years, and she lost 13 lb. in weight. The "privileges" of the prison rules demanded being granted by the Home Secretary, the hunger-strike ended. She regained her health, and felt quite strong and well when a second hunger-strike began in June. On the second day of the forcible feeding she had to be discharged on "medical grounds." The pain caused by the forcible passage of the tube through her nose caused a collapse after each feed, and on account of the palpitation and cardiac irregularity set up, the doctors considered further feeding too "dangerous to health" to be persisted in.

This also is a type of many similar cases.

Physical Injuries Inflicted on Prisoners.

During the struggle before the feeding prisoners were held down by force, flung on the floor, tied to chairs and iron bedsteads. As might be expected, severe bruises were thus inflicted. The prisoners, however, did not complain of these. They regarded them as the inevitable consequences of political war.

Forcible feeding by the œsophageal or nasal tube cannot be performed without risk of mechanical injury to the nose and throat. Injuries to the nose were especially common owing chiefly to the lack of previous examination and skill in operating. Though the medical officers were informed in several cases that the nasal passage was known to be blocked and narrowed by previous injury, no examination was made. The prisoners were usually flung down, or tied and held while the tube was pushed up the nostrils. The intense pain so produced often forced uncontrollable screams from the prisoners. In most cases local frontal headache, earache, and trigeminal neuralgia supervened besides severe gastric pain which lasted throughout the forcible feeding, preventing sleep.

One says: "After each feeding it (the nasal pain) gets worse, so that it becomes the refinement of torture to have the tube forced through." The nasal mucous membrane was frequently lacerated, as evidenced by bleeding of the nose and swallowing of blood from the back of the nose. Sometimes the tube had to be pushed up the nostrils three to five times before a passage could be forced. In several such cases bleeding continued for some days; in one case it recurred for ten days. In another case an abscess followed, with intense pain over the frontal region, which lasted for weeks after release. Swelling of the mucous membrane of the nose and pharynx developed almost invariably; it was accompanied by Eustachian pain, and frequently this was succeeded by severe pain over the entire area of distribution of the fifth nerve. This trigeminal pain continued as long as the forcible feeding was continued. The equally invariable pharyngitis, which was obviously of septic origin, lasted in certain cases for some time after the release of the prisoner. When the œsophageal tube was employed the mouth was wrenched open by pulling the head back by the hair over the edge of a chair, forcing down the chin, and inserting the gag between the teeth. Naturally, in this process the lips, inside of the cheeks, and gums were frequently bruised, sometimes bleeding and sore to touch for days after. In a number of cases when the wardresses attempted to forcibly feed with a cup, they endeavoured to make the prisoner open her mouth by sawing the edge of the cup along the gums. In one case a cup with a broken edge was used and caused laceration and severe pain.

Accidents.

The danger of forcible feeding is increased by the accidents liable to accompany the passage of tubes down the nose or throat. In several instances the œsophageal tube was passed into the larynx. Even in cases who did not offer resistance great pain and suffocation was caused by the clumsy use of the nasal tube when it coiled up in the back of the throat or came out of the mouth, and then had to be

re-inserted several times. The severe choking and vomiting which sometimes accompanied the passage of the tube led to danger from the entrance of food into the larynx.

The injection of food into the lung actually occurred in the case of one unresisting prisoner in whom the operation immediately caused severe choking, and vomiting was followed by persistent coughing. All night the patient could not sleep or lie down on account of great pain in the side of the chest. She was hurriedly released next day, so ill that the authorities discharging her obliged her to sign a statement that she left the prison at her own risk. On her arrival at home she was found to be very ill, suffering from pneumonia and pleurisy due to the food passed into the lung, Being fortunately a young and strong woman, she escaped with her life.

Effects on the Circulatory System.

In a large number of the written statements we find that after the feeding violent palpitation occurred, frequently so severe as to prevent sleep. In certain cases it would appear that the cardiac nerve mechanism was profoundly affected, for a degree of irregularity of the cardiac rhythm is reported even by the physicians attending released prisoners. In some cases who had never previously suffered from any heart trouble this irregularity continued to occur for some weeks after release, in spite of rest in bed under medical care. Giddiness, faintness, and weakness were frequent symptoms. Collapse took place in many cases after but few (2–4) attempts at forcible feeding. The prisoner became icy cold and had to be removed to the hospital cells and surrounded with hot bottles. In most of the cases which came under our personal observation and under the care of other physicians the temperature remained subnormal (96·4° to 97·4°) for some weeks after release, even although the time was spent in bed with careful feeding and other medical treatment.

Effects of Forcible Feeding on the Stomach and Alimentary System.

The well-known principles and precautions for correct artificial feeding were not observed in the prison forcible feeding. Into the completely empty and contracted stomachs of patients who had fasted for variable periods (usually 24 to 48 hours) the officials (*a*) *rapidly* poured (*b*) large quantities of (*c*) often *cold* liquid. Such a procedure, as is well recognised in hospital practice, inevitably causes pain, often agonising, with distension and ballooning of the stomach, as well as spasm of the muscular wall of the organ. As a necessary consequence, regurgitation and vomiting followed in by far the large majority of the cases. The following statement may be quoted as a typical example:—

In Birmingham (May 29th) I was fed by nasal tube. Knowing what to expect I braced up my nerves and sat quietly in the chair instead of struggling and fighting against it as I had done in Newcastle. The passage of the tube through the nose caused me but little inconvenience this time, but its further passage caused me to retch, vomit, shake, and suffocate to such an extent that in the struggle for air I raised my body till I stood upright in spite of three or four wardresses holding me down, after which I sank back in the chair exhausted. When the tube was withdrawn I seemed to be afflicted with chronic asthma and could only breathe in short gasps. To take a deep breath caused me excruciating pain. Two wardresses helped me back to my cell where I lay in agony, the pain becoming worse every moment. I vomited milk which eventually became tinged with blood, &c.

When vomiting did not occur the majority of prisoners suffered acutely from the severe pain of the sudden distension of the stomach. Every prisoner has suffered from indigestion—pain, distension, heartburn, nausea, and sickness. All the medical certificates we have before us from practitioners who have examined prisoners after release include these facts. The following certificate is typical: "At midnight on July 1st I was called to see Miss R. and found her just recovering from an attack of pain, so severe as to collapse her, after attempting to take food on her return from Holloway. I put her on the very lightest nourishment in very small quantities, and otherwise found it necessary to treat her as a complete invalid for some days."

Vomiting often continued for hours after the operation of forcible feeding. The nutritive value of such "ordinary medical treatment," as it has been termed by the Home Secretary, was, of course, in the majority of cases *nil*, and in many cases life had to be saved, not by forcible feeding, but by the prompt release and restoration of the prisoner to her friends and to legitimate medical treatment. Vomiting was not, as has been alleged in Ministerial statements, brought on by resistance. One of the worst cases was that of a married woman beyond middle life, who made no resistance at all. The following is an abbreviation of her statement:—

After the first feeding by the nasal tube she was locked in her cell and felt as if she would go mad with pain in the ears, running of the nose, and vomiting all through a sleepless night. On the following day she was gagged (though not resisting) and fed by the œsophageal tube, which caused her extreme pain and faintness. The throat bled and she vomited profusely. She fell exhausted on the bed, and was left alone in her cell, where she vomited at intervals all the morning. In the afternoon the feeding process was actually again begun, when suddenly the heart appeared to stop beating. The tube was immediately pulled out, but the patient fainted. She vomited incessantly during the night, feeling intensely ill with a swollen sore throat. In the morning she was released by urgent order of the Home Secretary, and was removed to a nursing home where she slowly recovered strength, until after some days she could be removed to her home.

In this, as in many others, no respite of the feeding or any medical treatment were given. That such malpractices and torture could be meted out to prisoners by medical officers we should have believed impossible at the present day had we not numerous cases of the kind before us. As may be readily understood, the severe indigestion set up by forcible feeding led to other troubles of the bowel. However incredible it may seem, it is a fact that in Holloway Prison the prisoners were locked up in their cells for three to four hours consecutively, by order, it is stated, of the prison doctors, thus being prevented from access to the lavatories at a time when most required. In very many cases dyspepsia has continued for weeks or months after release.

General Inanition.

Medical practitioners who knew certain prisoners before their imprisonment and examined them after release report the supervention of anæmia with considerable loss of weight. One lost 13 lb. in eight days of forcible feeding; another 9 lb. in five days, another 8 lb. in a fortnight, while others report a loss of 9 lb., of 1 stone, and 2 stone during the term of imprisonment. This is not surprising when one remembers what has been already pointed out in the description of the effects upon the alimentary canal. As the majority of the prisoners vomited up so much of the liquid administered to them, anæmia and decrease in weight were necessary consequences. This result of prison forcible feeding is directly contrary to the results of tube-feeding when used as a form of medical treatment in asylum and hospital practice.

Effects on the Nervous System.

Every physician who has examined the released suffrage prisoners agree that in the majority of cases by far the most serious effects of the treatment by forcible feeding fall upon the nervous system. The younger prisoners escape with the least serious effects, but in those over thirty years of age the nervous symptoms are more marked and more lasting. Before enumerating the symptoms, we desire to point out that the suffrage prisoners enter prison in a totally different state of mind to that which is met with in asylum practice to which the condition of treatment has been compared. These women are normal individuals who go to prison as political offenders; they are protesting against what is, to them, an unjust anomoly, and they assert in consequence that they should not be treated as common felons. With the keen sense of suffering political injustice rankling in their minds, they determine on the hunger-strike not to obtain release, as has been asserted, but to obtain equal treatment in prison during the term of their sentences for prisoners convicted of like offences, or to obtain from the authorities the due observance of the prison rules.

We are not here concerned to discuss the right or wrong of the political methods of the militant suffragist. We merely point out that on admission the prisoners are in a normal mental condition, which cannot be said of the patients who refuse food in the asylums. We have personally examined a number of the released prisoners, we have obtained medical certificates from the physicians who have attended others immediately on release, we have questioned the friends, and we have carefully considered the statements of those who have not come under medical care until some time after their release. In the evidence we have personally examined, and in the certificates afforded us by other physicians, there is certainly no evidence of "hysteria"—using that much-abused word in the sense of exaggerated or excessive display of emotion. On the contrary, the suffrage prisoners have invariably described their experiences with precision and restraint, deprecating their own share of

suffering, and minimising what they have themselves endured. They only expressed themselves with feeling when relating the sufferings of their friends and the repulsive conditions of the prison.

We may group the effects on the nervous system under the following headings: (*a*) Symptoms on release from prison; (*b*) mental condition during imprisonment.

(*a*) *Symptoms on release from prison.*—Undoubtedly the strain on the nervous system was in every case extremely severe. In general terms, the younger and stronger the physique of the prisoner the less the torture told on the general condition. On the other hand, the better the physique of the patient, the longer she was compelled to endure the feeding, and hence it happened that in several women a state of acute delirium set in, after a long period of courageous endurance, ended only by a hurried release. They can remember nothing of the last 12 hours in prison, the mind being a blank except for the recollection of a sudden consciousness that the doctor and wardresses were surrounding the bed and promising immediate release. For weeks afterwards sleep was broken and disturbed by horrible nightmares and dreams. These patients were on the verge of acute neurasthenia, apathetic and indifferent to matters of interest and importance. In the older patients who had been released at an earlier stage of the forcible feeding, there was a constant feeling of apprehension, with the same symptoms of broken sleep and painful dreams. In others, the characteristic symptoms of neurasthenia were present—inability to concentrate the attention on the simplest matter, loss of memory, hyper-sensitiveness to sounds, great fatigue, and general muscular weakness. In others, again, the following physical signs predominated—weak pulse, irregular at intervals, dyspepsia, pruritus, and vaso-motor instability, all indicating profound disturbance of the system generally. In many cases under efficient medical care, the nervous system recuperated by means of a maximum of sleep. The patient would be drowsy all day and sleep for 14 to 16 hours out of the 24 during the first week after release was not uncommon. In none of the cases seen by us or by other physicians, nor in the written statements, have we found any mental condition resembling the introspective or irrelevant ramblings met with so constantly in the average self-centred neurasthenic of the text-books and the consulting-room. These patients, without in any way exalting their experiences, regarded them as horrors which must be borne for the sake of the political and moral principle for which they were undergone.

Further physical signs of cerebro-spinal neurasthenia were present in the large majority of the cases examined. The knee reflexes were exaggerated. The patients were readily startled and easily fatigued. In some cases the extreme pain, headache and neuralgia, which had been started by the passage of the tubes, remained as troublesome symptoms. Most were unable to concentrate their attention on professional work for months after. Many patients were kept in bed for a month; some had tremors, and for several weeks were scarcely able to walk. In one case an attack of functional paralysis of the upper part of the body on the right side followed the sixth attempt at forcible feeding. The patient describes it thus: "The whole of my face and the upper part of my body became rigid, and though I was quite unable to move, or speak, it was fearfully painful to be touched. I had great difficulty in breathing. Later in the evening the doctor told me that he could not stop feeding me on account of this attack. They attempted to feed me next morning, but after several attempts, found it impossible to get the tube down my throat. The same symptoms of paralysis occurred. I was released later in the same day."

Severe retching occurred in every case. In a large number of cases there was frequent vomiting, even when the patient felt too weak to resist the operation, and was suffering only from nervous exhaustion. A few prisoners describe a condition of nervous prostration, with breathlessness, lasting from a few hours to several days. In one case, although the patient took her food in the ordinary way after the first attempt at forcible feeding, the horror of the recollection of the operation, combined with the effects of the shock and pain, reduced her to this condition.

(*b*) *Mental condition during prison.*—To the physical torture of forcible feeding the prison officials in many cases added the intellectual torture of solitary confinement, and to this was added the mental anguish caused by hearing the cries, choking, and struggles of their friends. When there were many cases selected by the medical officers or the Home Secretary for forcible feeding, this mental torture was hours twice and sometimes three times daily. With a nervous system already overwrought by this ordeal, each prisoner faced her own struggle. On an average the resistance could only be overcome by the united services of four to six wardresses and two doctors. After the insertion of the tube the patient often fell into a state of collapse, from which she had scarcely emerged before the terrible noise and groans of the next feeding time began again. Many robust and healthy-minded women whom no one could term neurotic, state that they feared they were going mad; they could not sleep, and many felt that suicide would be preferable. The terror was accentuated by the fact that in most of the prisons for the greater part of the time of imprisonment they were locked up in their cells of solitary confinement, and left all day and night with the thought of the past and the dread of the future ordeal always before them.

One prisoner whom we interviewed, and whom we can certify as possessing a normal mental condition, writes: "As the hour for forced feeding drew near I could not help being deeply agitated, and I used to stand, or sit, or walk about in a state of horrible suspense, with my heart thumping against my ribs, and listening to the footsteps of the doctors and wardresses as they walked to and fro and passed from cell to cell, and the groans and cries of those who were being fed, until at last the steps paused at my door. ..... My turn had come."

A skilled trained nurse writes: "I will say nothing of the mental misery which accompanies such experiences, because this in indescribable."

Another writes thus: "From 4.30 until 8.30 I heard the most awful screams and yells coming from the cells. I had never heard human beings being tortured before, and I shall never forget it. I sat on my chair with my fingers in my ears for the greater part of that endless four hours. My heart was going like a hammer and the suspense of it all was terrible."

One prisoner had to be dismissed to her home immediately after only a single feeding because the acute nervous symptoms which followed the operation led the prison officials to fear a complete mental breakdown and to release her immediately in charge of two attendants, although she had only served 12 days of a four months' sentence. The wonder is that so many of the prisoners retained their sanity. Neurologists, however, will understand what consequences may develop in the future.

Many points in this matter of forcible feeding of political prisoners and prison discipline and prison hygiene have a direct medical bearing, but cannot be now considered. In the present one of forcible feeding the importance of sterilisation of the tubes after each case is obvious, and where a number of patients with septic conditions of the nose, throat and mouth, phthisis, &c., are herded together in a prison the danger of infection cannot be exaggerated. Full details of what steps were sometimes taken by the officials in the different prisons cannot be ascertained, but that many prisoners were forcibly fed, one after another, with tubes not sterilised between each case, and by doctors and assistants with unwashed hands was observed by eye-witnesses, as well as by those forcibly fed. Naturally a great deal of infection of the nose and throat occurred.

In the light of the facts enumerated in this briefly summarised paper the position of the medical profession in regard to forcible feeding of suffrage prisoners must be considered anew. We cannot believe that any of our colleagues will agree that this form of prison torture is justly described in Mr. McKenna's words as "necessary medical treatment" or "ordinary medical practice."

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 95 largest English towns, with an aggregate population estimated at 17,639,881 persons at the middle of this year, 8794 births and 3942 deaths were registered during the week ending August 17th. The annual rate of mortality in these towns, which had been 11·3, 11·0, and 11·5 per 1000 in the three preceding weeks, rose again to 11·7 per 1000 in the week under notice. During the first seven weeks of the current quarter the mean annual death-rate in these 95 towns averaged 11·3 per 1000, and was equal to the average rate recorded in London during the same period. The annual death-rates in the several towns last week ranged from 6·1 in Swindon, 6·3 in Ilford and in Northampton, 6·4 in Wallasey, 6·6 in Rotherham, and 6·7 in Derby, to 16·8 in Bury, 17·2 in Oldham, 17·3 in Liverpool, 17·6 in Plymouth, and 19·1 in Wigan.

The 3942 deaths from all causes in the 95 towns last week showed an excess of 52 compared with the number in the previous week, and included 423 which were referred to the principal epidemic diseases, against numbers steadily rising from 342 to 495 in the six preceding weeks. Of these 423 deaths, 199 resulted from infantile diarrhœal diseases, 109 from measles, 49 from whooping-cough, 30 from diphtheria, 20 from enteric fever, and 16 from scarlet fever, but not one from small-pox. The mean annual death-rate from these epidemic diseases last week was equal to 1·3 per 1000, against 1·3 and 1·5 in the two preceding weeks. The deaths of infants under 2 years of age attributed to diarrhœa and enteritis, which had increased from 72 to 239 in the six preceding weeks, declined to 199 last week, and included 89 in London and its suburban districts, 12 in Manchester, 10 in Birmingham, 10 in Liverpool, 9 in Leeds, and 7 in Sheffield. The deaths referred to measles, which had declined from 156 to 115 in the four preceding weeks, further fell to 109 last week, and caused the highest annual death-rates of 1·3 in Gateshead, 1·5 in Bootle, 2·0 in Wakefield and in Hull, 2·5 in Merthyr Tydfil, and 3·4 in Middlesbrough. The fatal cases of whooping-cough, which had been 44, 54, and 66 in the three preceding weeks, declined to 49 last week; 13 deaths were recorded in London, 6 in Liverpool, and 2 each in Ipswich, Manchester, Burnley, and Sunderland. The deaths attributed to diphtheria, which had been 40, 31, and 36 in the three preceding weeks, declined to 30 last week, and included 8 in London, and 2 each in Portsmouth, Bolton, Huddersfield, and Hull. The deaths referred to enteric fever, which had been 10, 15, and 10 in the three preceding weeks, rose to 20 last week, of which number 3 were recorded in Bradford, 2 in Portsmouth, and 2 in Rhondda. The fatal cases of scarlet fever, which had

increased from 19 to 29 in the four preceding weeks, declined to 16 last week; 3 deaths occurred in London, 2 in Stoke-on-Trent, and 2 in Liverpool.

The number of scarlet fever patients under treatment in the Metropolitan Asylums and in the London Fever Hospital, which had been 1525, 1509, and 1559 at the end of the three preceding weeks, were again 1559 on Saturday last; 182 new cases of this disease were admitted to these institutions during the past week, against 222, 175, and 207 in the three preceding weeks. These hospitals also contained on Saturday last 832 cases of diphtheria, 619 of measles, 381 of whooping-cough, and 37 of enteric fever, but not one of small-pox. The 1019 deaths from all causes in London were 46 in excess of the number in the previous week, and were equal to an annual death-rate of 11·8 per 1000. The deaths referred to diseases of the respiratory system, which had steadily decreased from 131 to 99 in the six preceding weeks, further fell to 97 last week, and were 22 below the number recorded in the corresponding week of last year.

Of the 3942 deaths from all causes in the 95 large towns last week, 158 resulted from different forms of violence, and 342 were the subject of coroners' inquests. The causes of 43, or 1·1 per cent., of the deaths registered were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Manchester, Sheffield, Leeds, Bristol, West Ham, Bradford, Hull, Newcastle-on-Tyne, and in 69 other smaller towns. The 43 uncertified causes of death included 9 in Liverpool, 6 in Birmingham, 3 in Stoke-on-Trent, 3 in Blackburn, and 3 in Gateshead.

HEALTH OF SCOTCH TOWNS.

In the 18 largest Scotch towns, with an aggregate population estimated at 2,182,400 persons in the middle of this year, 1052 births and 546 deaths were registered during the week ending August 17th. The annual rate of mortality in these towns, which had been 13·4 per 1000 in each of the two preceding weeks, declined to 13·1 per 1000 in the week under notice. During the first seven weeks of the current quarter the mean annual death-rate in these Scotch towns averaged 13·5 per 1000, against 11·3 per 1000 in the 95 large English towns during the same period. Among the several Scotch towns the annual death-rates last week ranged from 2·5 in Motherwell, 3·0 in Kilmarnock, and 6·5 in Kirkcaldy, to 17·7 in Coatbridge, 20·2 in Ayr, and 23·1 in Perth.

The 546 deaths from all causes were 14 fewer than the number recorded in the previous week, and included 61 which were referred to the principal epidemic diseases, against 64 and 62 in the preceding two weeks. Of these 61 deaths, 22 were referred to whooping-cough, 21 to infantile diarrhœal diseases, 7 to measles, 6 to diphtheria, 4 to scarlet fever, and 1 to enteric fever, but not one to small-pox. These 61 deaths from the principal epidemic diseases were equal to an annual death-rate of 1·5 per 1000, against 1·3 per 1000 in the 95 large English towns. The deaths referred to whooping-cough, which had declined from 19 to 10 in the four preceding weeks, rose to 22 last week: 9 deaths occurred in Glasgow, 3 in Aberdeen, 2 in Dundee, and 2 in Perth. The deaths of infants under two years of age attributed to diarrhœa and enteritis, which had been 31, 37, and 36 in the three preceding weeks, declined to 21 last week, and included 13 in Glasgow, 3 in Coatbridge, 2 in Dundee, and 2 in Govan. The fatal cases of measles, which had been 12, 8 and 11 in the three preceding weeks, declined to 7 last week; 3 deaths were registered in Coatbridge and 2 in Glasgow. The deaths referred to diphtheria last week numbered 6, against 4, 5, and 2 in the three preceding weeks, and included 3 in Glasgow. Three of the 4 deaths attributed to scarlet fever and the fatal case of enteric fever were recorded in Glasgow.

The deaths referred to diseases of the respiratory system in the 18 Scotch towns, which had been 59, 62, and 58 in the three preceding weeks, were 62 last week; 25 deaths were attributed to different forms of violence, against 26 and 19 in the two previous weeks.

HEALTH OF IRISH TOWNS.

In the 22 town districts of Ireland, having an estimated population of 1,157,014 persons at the middle of this year, 594 births and 291 deaths were registered during the week ending August 17th. The annual rate of mortality in these towns, which had been 16·4 and 14·0 per 1000 in the two preceding weeks, further fell to 13·1 per 1000 in the week under notice. During the first seven weeks of the current quarter the mean annual death-rate in these Irish towns averaged 14·7 per 1000; in the 95 large English towns the corresponding death-rate did not exceed 11·3 per 1000, while in the 18 Scotch towns it was equal to 13·5 per 1000. The annual death-rates in the several Irish towns last week were 15·3 in Dublin (against 11·8 in London), 11·1 in Belfast, 16·3 in Cork, 2·5 in Londonderry, 14·9 in Limerick, and 9·5 in Waterford, while n the remaining 16 towns the mean rate was equal to 13·9 per 1000.

The 291 deaths from all causes in the 22 Irish towns were 19 fewer than the number recorded in the previous week, and included 31 which were referred to the principal epidemic diseases, against 49 and 39 in the two preceding weeks; of these 31 deaths, 13 resulted from diarrhœal diseases, 6 from whooping-cough, 5 from measles, 3 from enteric fever, 3 from diphtheria, and 1 from scarlet fever, but not one from small-pox. These 31 deaths from the principal epidemic diseases were equal to an annual death-rate of 1·4 per 1000, against 1·3 per 1000 in the 95 large English towns and 1·5 in the 18 Scotch towns. The deaths attributed to diarrhœa and enteritis, which had been 11, 24, and 21 in the preceding three weeks, fell again to 13 last week, and included 12 of infants under two years of age; 8 deaths were recorded in Dublin and 4 in Belfast. The deaths referred to whooping-cough, which had been 7, 4, and 9 in the three preceding weeks, declined to 6 last week, and included 2 in Limerick. The fatal cases of measles, which had been 8, 8, and 7 in the three preceding weeks, further fell to 5 last week, and comprised 4 in Dublin and 1 in Ballymena. The 3 deaths attributed to diphtheria were registered in Belfast. Of the 3 fatal cases of enteric fever, 2 occurred in Dublin and 1 in Belfast; the death from scarlet fever was recorded in Dublin.

The deaths in the 22 Irish towns, referred to diseases of the respiratory system, which had been 33 and 41 in the two previous weeks, were 40 in the week under notice. Of the 291 deaths from all causes, 97, or 33 per cent., occurred in public institutions, and 6 resulted from different forms of violence. The causes of 7, or 2·4 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 95 large English towns the proportion of uncertified causes of death last week did not exceed 1·1 per cent.

VITAL STATISTICS OF LONDON DURING JULY, 1912.

IN the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 4·9 per 1000 of the population estimated at 4,519,754 persons in the middle of the year. In the three preceding months the rates were 3·9, 4·8, and 4·8 per 1000 respectively. The lowest rates last month were recorded in Hammersmith, Chelsea, the City of Westminster, Hampstead, Hackney, the City of London, Lambeth, and Wandsworth; and the highest rates in St. Pancras, Holborn, Stepney, Poplar, Bermondsey, Greenwich, and Woolwich. Scarlet fever was more prevalent than in any previous month of this year; among the several boroughs the greatest proportional prevalence last month was recorded in Fulham, St. Marylebone, Stepney, Greenwich, and Woolwich. There were 1483 scarlet fever patients under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 1201, 1222, and 1380 at the end of the three preceding months; the weekly admissions averaged 198, against 129, 158, and 184 in the three preceding months. The prevalence of diphtheria showed a slight decline from that recorded in the two preceding months; this disease was proportionally most prevalent in St. Pancras, Finsbury, Shoreditch, Lewisham, and Woolwich. The Metropolitan Asylums Hospitals contained 825 diphtheria patients at the end of last month against 982, 952, and 877 at the end of the three preceding months; the weekly admissions averaged 112, against 103, 117, and 112 in the three preceding months. Enteric fever was rather more prevalent than in other recent months;

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING JULY, 1912.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated population in the middle of 1912.	NOTIFIED CASES OF INFECTIOUS DISEASE.												DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.									Deaths from all causes.	Death-rate per 1000 living.†
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	4,519,754	—	1053	623	—	54	—	33	319	15	26	2124	4·9	—	170	18	46	83	13	162	492	1·1	4867	11·3
West Districts.																								
Paddington	142,362	—	30	12	—	1	—	—	9	—	2	54	4·0	—	3	—	—	2	—	8	13	1·0	134	10·5
Kensington	171,746	—	41	20	—	4	—	—	10	—	—	75	4·6	—	—	2	1	3	1	4	11	0·7	187	12·3
Hammersmith	122,750	—	21	13	—	—	—	1	8	—	—	43	3·7	—	4	1	2	3	—	4	14	1·2	127	11·2
Fulham	155,402	—	55	14	—	3	—	2	5	—	1	80	5·4	—	1	4	—	4	2	2	13	0·9	155	10·9
Chelsea	65,397	—	10	6	—	—	—	1	1	—	—	18	2·9	—	2	—	—	3	—	1	6	1·0	61	10·1
City of Westminster	157,248	—	27	21	—	3	—	—	3	1	2	57	3·8	—	1	1	—	2	—	5	9	0·6	169	12·6
North Districts.																								
St. Marylebone	116,155	—	37	14	—	—	—	1	7	—	—	59	5·3	—	6	—	—	1	1	3	11	1·0	113	10·8
Hampstead	85,966	—	7	13	—	—	—	—	3	—	—	23	2·8	—	2	—	—	1	—	1	4	0·5	56	7·7
St. Pancras	216,145	—	53	52	—	3	—	1	19	—	3	131	6·3	—	21	—	5	4	1	3	34	1·6	272	13·7
Islington	326,398	—	75	40	—	2	—	—	14	3	4	138	4·4	—	17	—	6	6	1	11	41	1·3	384	12·8
Stoke Newington	50,581	—	10	6	—	—	—	—	1	—	2	19	3·9	—	1	—	—	—	—	—	1	0·2	49	10·5
Hackney	222,986	—	45	20	—	—	—	—	15	1	1	82	3·8	—	2	1	1	3	—	8	15	0·7	225	10·9
Central Districts.																								
Holborn	48,026	—	14	8	—	1	—	—	5	—	—	28	6·1	—	5	—	1	2	—	1	9	2·0	71	16·6
Finsbury	86,130	—	16	16	—	—	—	—	14	—	1	47	5·7	—	11	—	2	2	—	5	20	2·4	128	16·1
City of London	18,695	—	1	—	—	—	—	—	1	—	—	2	1·1	—	—	—	—	—	—	1	1	0·6	14	8·6
East Districts.																								
Shoreditch	110,430	—	23	25	—	—	—	1	13	1	—	63	5·9	—	1	—	5	7	—	8	21	2·0	165	16·4
Bethnal Green	127,985	—	24	21	—	3	—	4	13	1	1	67	5·5	—	6	—	—	1	—	7	14	1·1	156	12·8
Stepney	277,315	—	96	38	—	3	—	6	32	3	3	181	6·8	—	11	1	2	8	—	16	38	1·4	340	13·4
Poplar	161,597	—	37	29	—	7	—	3	18	1	—	95	6·1	—	13	—	2	1	1	8	25	1·6	205	13·6
South Districts.																								
Southwark	190,017	—	38	29	—	1	—	1	22	1	2	94	5·2	—	14	—	3	3	—	12	32	1·8	235	13·5
Bermondsey	125,260	—	37	19	—	2	—	3	14	—	—	75	6·2	—	16	—	2	1	1	16	36	3·0	196	16·7
Lambeth	297,560	—	49	27	—	3	—	5	25	—	—	109	3·8	—	15	1	2	4	2	10	34	1·2	325	11·8
Battersea	167,589	—	45	27	—	3	—	—	7	—	—	82	5·1	—	2	1	—	5	—	6	14	0·9	151	10·1
Wandsworth	321,881	—	57	26	—	9	—	—	11	1	—	104	3·4	—	4	—	1	6	1	7	19	0·6	274	9·4
Camberwell	261,591	—	57	35	—	4	—	1	19	1	2	119	4·7	—	5	3	3	6	1	8	26	1·0	257	10·6
Deptford	109,377	—	22	8	—	—	—	1	10	1	1	43	4·1	—	4	—	—	—	—	3	7	0·7	91	9·1
Greenwich	95,994	—	43	13	—	—	—	1	6	—	—	63	6·8	—	1	2	2	—	—	3	8	0·9	86	9·5
Lewisham	165,249	—	42	38	—	1	—	1	10	—	—	92	5·8	—	2	—	4	3	1	1	11	0·7	126	8·3
Woolwich	121,932	—	41	33	—	1	—	—	5	—	1	81	6·9	—	—	1	2	2	—	—	5	0·4	115	10·5
Port of London	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

† The death-rates are corrected for variations in sex- and age-constitution of the populations of the several boroughs, the population of England and Wales being taken as the standard.

the greatest proportional prevalence of this disease last month was recorded in Kensington, Fulham, the City of Westminster, Bethnal Green, Poplar, and Wandsworth. The number of enteric fever patients under treatment in the Metropolitan Asylums Hospitals, which had been 32 at the end of each of the two preceding months, was 33 at the end of last month; the weekly admissions averaged 6, against 7, 8, and 7 in the three preceding months. Erysipelas was proportionally most prevalent in Holborn, Finsbury, Shoreditch, Stepney, Poplar, Southwark, and Bermondsey. The 33 cases of puerperal fever notified during the month included 6 in Stepney, 5 in Lambeth, 4 in Bethnal Green, 3 in Poplar, 3 in Bermondsey, and 2 in Fulham. The 15 cases of cerebro-spinal meningitis included 3 in Islington and 3 in Stepney; and of the 26 cases notified as poliomyelitis 4 belonged to Islington, 3 to St. Pancras, 3 to Stepney, and 2 each to Paddington, the City of Westminster, Stoke Newington, Southwark, and Camberwell.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided; the death-rates from all causes are further corrected for variations in the sex and age constitution of the populations of the several boroughs. During the five weeks ending August 3rd the deaths of 4867 London residents were registered, equal to an annual rate of 11·8 per 1000; in the three preceding months the rates had been 14·3, 13·3, and 11·6 per 1000. The death-rates last month ranged from 7·7 in Hampstead, 8·3 in Lewisham, 8·6 in the City of London, 9·1 in Deptford, 9·4 in Wandsworth, and 9·5 in Greenwich, to 13·6 in Poplar, 13·7 in St. Pancras, 16·1 in Finsbury, 16·4 in Shoreditch, 16·6 in Holborn, and 16·7 in Bermondsey. The 4867 deaths from all causes included 492 which were referred to the principal infectious diseases; of these, 170 resulted from measles, 18 from scarlet fever, 46 from diphtheria, 83 from whooping-cough, 13 from enteric fever, and 162 from diarrhœa and enteritis among children under two years of age. The lowest death-rates from these diseases in the aggregate were recorded last month in the City of Westminster, Hampstead, Stoke Newington, the City of London, Wandsworth, and Woolwich; and the highest rates in St. Pancras, Holborn, Finsbury, Shoreditch, Poplar, Southwark, and Bermondsey. The 170 deaths from measles were 22 in excess of the corrected average number in the corresponding period of the five preceding years; this disease was proportionally most fatal last month in St. Pancras, Holborn, Finsbury, Poplar, Southwark, and Bermondsey. The 18 fatal cases of scarlet fever were equal to only one-half of the corrected average number, and included 4 in Fulham, 3 in Camberwell, 2 in Kensington, and 2 in Greenwich. The 46 deaths from diphtheria were 4 above the corrected average number; the greatest proportional mortality from this disease was recorded in St. Pancras, Islington, Finsbury, Shoreditch, Greenwich, and Lewisham. The 83 fatal cases of whooping-cough were 11 fewer than the corrected average; this disease caused the highest death-rates in Chelsea, Fulham, Holborn, Shoreditch, Stepney, and Battersea. The 13 deaths from enteric fever were 4 above the average, and included 2 in Fulham and 2 in Battersea. The mortality from diarrhœa and enteritis among children under two years of age was proportionally greatest in Paddington, Finsbury, Shoreditch, Stepney, Southwark, and Bermondsey. In conclusion, it may be stated that the aggregate mortality in London last month from the principal infectious diseases was equal to the average.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments have been notified:—Staff-Surgeons: J. D. S. Miller and A. Woollcombe to Chatham Hospital, both temporary; A. J. Wernet to the *Pembroke*, for Royal Naval Barracks; E. Cox to the *Pomone*, additional, for Royal Naval College, Dartmouth, temporary; and G. D. Bateman to Sick Quarters, Queensferry. Surgeons: H. E. Scargill to the *Royal Arthur* and for group of ships of Third Fleet; S. H. Vickery to the *Hebe*; F. H. Holl, C. H. L. Petch, J. H. Wright, G. A. S. Hamilton, G. P. Adshead, S. F. Dudley, C. R. M. Baker, and H. M. Langdale all to the *President*, additional, for five months' course of instruction; H. W. Nicholls to the R.M. Division, Portsmouth; K. H. Hole to the *Pomone*, additional, for Royal Naval College, Dartmouth; and J. Hadwen to Haslar Hospital.

ROYAL ARMY MEDICAL CORPS.

The undermentioned Captains to be Majors (dated August 14th, 1912):—Joseph F. Whelan, William M. Power, and Robert B. Black.

The undermentioned Lieutenants (on probation) are confirmed in their rank:—Thomas A. Weston, Roy K. Mallam, William McNaughtan, David T. M. Large, William F. Christie, Alexander Hood, Edward A. Strachan, Cuthbert J. Blaikie, James H. M. Frobisher, Walter Stevenson, John L. Ritchie, David T. Richardson, Owen W. J. Wynne, Christopher M. Ingoldby, Sidney J. Higgins, Percy A. With, Stephen J. Barry, and Henry R. L'Estrange.

Colonel R. I. D. Hackett, principal medical officer of the Abbottabad Brigade of the Northern Army in India, has taken up duty at Sialkot. Lieutenant-Colonel H. D. Rowan, at present holding charge of the Military Hospital at Tidworth, Salisbury Plain, has been selected for the increased rate of pay under Article 317 of the Royal Warrant. Lieutenant-Colonel A. P. Blenkinsop has taken up duty at Army Headquarters, Simla, as Assistant Director of Medical Services, British Troops, in succession to Brevet-Colonel R. S. F. Henderson, honorary physician to His Majesty the King, transferred to Quetta to command the Station Hospital. Lieutenant-Colonel A. E. Tate, commanding the Station Hospital at Rawal Pindi Cantonment, has been transferred to Peshawar to officiate as Principal Medical Officer of the First (Peshawar) Division, in succession to Colonel S. C. B. Robinson, placed on retired pay. Lieutenant-Colonel R. H. Hall, senior medical officer at Bermuda, has arrived home on leave of absence. Lieutenant-Colonel E. Eckersley, Deputy Assistant Director-General, Army Medical Services, has been placed under orders to proceed to India during the ensuing trooping season, for duty with the Northern Army.

Major H. S. Thurston has arrived home on leave of absence from the Military Hospital, Valletta, Malta. Major J. W. Langstaff has been transferred from the Aldershot Command to the London District for duty. Major S. de C. O'Grady has been appointed to officiate as Sanitary Officer to the British Troops in Egypt, in succession to Major M. F. G. Fell. An exchange on the roster for service abroad has been approved by the Director-General of the Army Medical Service between Major J. E. Carter, Company Officer No. 10 Company of the Royal Army Medical Corps at Chatham, and Major E. C. Hayes, sanitary officer, Portsmouth District. Major G. G. Delap, D.S.O., assistant instructor at the Royal Army Medical Corps School of Instruction, Aldershot, has embarked for a tour of service in South Africa. Major J. E. Hodgson, at present serving in the London District, has been placed under orders to proceed to India for duty with the Southern Army during the ensuing trooping season. Major C. B. Lawson has been transferred from the Royal Victoria Hospital at Netley to the Military Hospital at Shorncliff, and appointed Specialist in Operative Surgery.

Captain C. G. Thomson has taken up duty in the Scottish Command. Captain G. De la Cour, specialist in operative surgery, has arrived home on leave of absence from Bangalore. Captain J. S. Pascoe has been selected for appointment as Specialist in Midwifery and Diseases of Women and Children to the Woolwich District, in succession to Major R. H. Fuhr, D.S.O., whose tenure of the appointment has expired. Captain E. H. M. Moore has been appointed to the Eastern Command for duty. Captain D. S. Skelton has left Strensall for a tour of service at Zanzibar. Captain T. S. Dudding has returned to the Military Hospital at Colchester on completion of duty at Ipswich. Captain T. S. Eves has been transferred from the Station Hospital at Benares to Lucknow for duty. The following officers at present stationed in Ireland have been selected to attend a course of instruction for promotion to the rank of Major at the Royal Army Medical College, Grosvenor-road, London, commencing on Oct. 31st next:—Captains O. Ievers, M. C. Wetherell, A. A. Meaden, N. Low, C. J. Coppinger, J. E. Hoar, C. W. O'Brien, G. G. Tabuteau, R. F. Humfrey, G. Ormrod, J. H. Graham, W. Benson, C. E. W. S. Fawcett,

V. H. Symons, E. L. Moss, M. J. Cromie, and E. T. Potts. Captain W. Mitchell has been transferred from the Military Hospital at Ambala Cantonment to Subathu, Simla Hills. Captain T. Scatchard, on return from a tour of service at Ranikhet, India, has been appointed for duty as Medical Officer in Charge at Ad Fines Camp. Captain C. W. O'Brien has taken up duty at Kilbride on transfer from Dublin. Captain W. F. H. Vaughan has been selected for appointment as Specialist in Operative Surgery to the Cork District, Irish Command, in succession to Captain R. M. Ranking, whose tenure of the appointment has expired. Captain R. D. O'Connor has joined for duty at Cliffden on return from a tour of service in India. Captain E. Ryan has been placed under orders to proceed to India for a tour of duty with the Southern Army during the ensuing trooping season.

Lieutenant O. W. J. Wynne has been appointed to the London District for duty at the Queen Alexandra Military Hospital, Grosvenor-road. Lieutenant G. H. Dive has embarked for a tour of service in North China. Lieutenant A. G. Jones and Lieutenant F. R. Laing have been placed under orders to proceed to India for a tour of duty with the Northern Army during the ensuing trooping season. Lieutenant W. Stewart has been transferred from the Military Hospital at Bedford to Colchester, on relief by Lieutenant-Colonel A. P. Poynder.

INDIAN MEDICAL SERVICE.

Colonel J. Smyth, principal medical officer of the Secunderabad Brigade, Southern Army in India, has been appointed to officiate as Surgeon-General with the Government of Madras Presidency during the absence on leave of Surgeon-General W. B. Bannerman. Lieutenant-Colonel S. Henderson has been selected for the increased rate of pay in the list of advanced Lieutenant-Colonels, in succession to Lieutenant-Colonel P. Hehir, promoted to the rank of Colonel. Lieutenant-Colonel B. B. Grayfoot has been appointed Civil Surgeon at Karachi, in succession to Major H. Bennett, placed on special duty. Lieutenant-Colonel C. H. James, medical adviser to Patiala State, has taken up duty as Officiating Civil Surgeon at Simla West.

Major E. C. MacLeod, civil surgeon at Dacca, has been granted combined leave of absence home from India for nine months. Major F. A. L. Hammond, civil surgeon at Maymyo, Burma, has been appointed to officiate as a First-class Civil Surgeon. Major L. P. Stephen has been permitted to extend his furlough by the Secretary of State for India. Major E. F. G. Tucker has been appointed to officiate as Professor of Pathology and Morbid Anatomy at the Grant Medical College, Bombay. Major W. Selby has taken up duty as Principal and Professor of Surgery at King George's Medical College, Lucknow.

The services of Captain F. P. Wernicke have been placed at the disposal of the Government of the Central Provinces. Captain W. J. Fraser has been selected for appointment as Civil Surgeon at Chindwara. Captain S. C. Pal, senior medical officer at Farrukhabad, has been appointed to hold civil medical charge of the station in addition to his military duties during the absence on leave of Captain F. W. Sumner. Captain H. Watts has been appointed Civil Surgeon at Wardha, Central Provinces. Captain R. D. MacGregor has been granted an extension of his leave of absence for six months on medical certificate. The services of Captain A. W. Greig have been placed at the disposal of the Punjab Administration by the Government of India for employment as Superintendent of the Central Jail at Montgomery. Captain R. B. Lloyd has been appointed probationer in the Chemical Examiners' Department, and has been posted for duty to the Chemical Laboratory at Calcutta. The services of Captain W. J. Collinson, medical officer of the 63rd (Palamcotta) Light Infantry, have been placed at the disposal of the Government of India, Department of Education, for employment on Plague Prevention duty in the United Provinces of Agra and Oudh.

TERRITORIAL FORCE.

Yeomanry.

Lincolnshire Yeomanry: Surgeon-Lieutenant Robert B. Purves to be Surgeon-Captain (dated Nov. 14th, 1910).

Infantry.

5th Battalion. The King's Own (Royal Lancaster Regiment): Norman Stuart Jeffrey (late Captain 3rd West Lancashire Field Ambulance, Royal Army Medical Corps) to be Lieutenant (dated August 17th, 1912).

Royal Army Medical Corps.

Yorkshire Mounted Brigade, Field Ambulance, Royal Army Medical Corps: Lieutenant John Hepple to be Captain (dated July 1st, 1912).

3rd West Lancashire Field Ambulance, Royal Army Medical Corps: Captain Norman S. Jeffrey resigns his commission (dated August 17th, 1912).

3rd South Midland Field Ambulance, Royal Army Medical Corps: Lieutenant Cyril C. Lavington to be Captain (dated July 15th, 1912).

2nd Northern General Hospital, Royal Army Medical Corps: The undermentioned officers, from the list of officers whose service will be available on mobilisation, to be Captains in the permanent *personnel* (dated May 1st, 1912): Captain Joseph F. Dobson and Captain James A. Coupland.

The undermentioned Captains to be Majors (dated May 1st, 1912): Joseph F. Dobson and James A. Coupland.

3rd Scottish General Hospital, Royal Army Medical Corps: Major Archibald G. Hay to be Lieutenant-Colonel (dated April 19th, 1912).

2nd London (City of London) Field Ambulance, Royal Army Medical Corps: Robert Eric Barnsley (late Cadet, Cambridge University Contingent, Senior Division, Officers Training Corps) to be Lieutenant (dated July 22nd, 1912).

Attached to Units other than Medical Units.—Lieutenant Robert Thornton to be Captain (dated Feb. 3rd, 1906). Captain John F. F. Parr to be Major (dated May 28th, 1912). Godfrey Kindersley Maurice to be Lieutenant (dated June 23rd, 1912). William Thomas Briscoe to be Lieutenant (dated July 8th, 1912). Lieutenant Leonard B. Cane to be Captain (dated May 22nd, 1912). Captain Andrew Fowler to be Major (dated June 22nd, 1912). James Arthur Morris to be Lieutenant (dated July 11th, 1912).

For Attachment to Units other than Medical Units.—John Francis Edmiston to be Lieutenant (dated June 3rd, 1912). Robert Glover Wills to be Lieutenant (dated July 27th, 1912).

ROYAL ARMY MEDICAL COLLEGE.

Colonel Bruce M. Skinner, M.V.O., to be Commandant and Director of Studies, vice Colonel E. J. E. Risk (dated August 15th, 1912).

Correspondence.

"Audi alteram partem."

THE MEDICAL PROFESSION AND THE NATIONAL INSURANCE ACT.

To the Editor of THE LANCET.

SIR,—I should be obliged if you will publish in THE LANCET the enclosed reply to a letter received from the Medical Secretary of the British Medical Association, requesting the medical members of the Advisory Committee to resign their seats on that committee.

I am, Sir, yours faithfully,

Leicester, August 20th, 1912. C. J. BOND.

[ENCLOSURE.]

To the Medical Secretary of the British Medical Association.

DEAR SIR,—I beg to acknowledge the receipt of your letter of to-day conveying the wish of the British Medical Association that I should resign my seat on the Advisory Committee in connexion with the National Insurance Act.

In answer I should like to point out that I was appointed by the Commissioners to advise in regard to matters affecting the interests of county hospitals without medical schools. In view of the important relationships between these interests and those of the medical profession and the public, and bearing in mind that in all probability agreements, requiring the approval of the Insurance Commissioners, will be entered into between Insurance Committees and the boards of general hospitals, especially in regard to the treatment of non-pulmonary cases of tuberculosis, I have, after very careful consideration, and with a full sense of responsibility, formed the opinion that it is my duty to remain at present a member of the Advisory Committee.

May I add that I am in full accord with the desire on the part of the profession to obtain adequate remuneration and fair conditions of service, and it is because I believe that these objects can be best obtained, and the interests to which I have alluded can be best safeguarded by further efforts at negotiation with the Commissioners that I have decided to take this course of action.

Yours faithfully,

Leicester, August 3rd, 1912. C. J. BOND.

To the Editor of THE LANCET.

SIR,—As one of the rank and file, practising in an industrial district, I should like through the medium of THE LANCET to pay a tribute to the public-spirited, wise, and courageous course of action of the 14 gentlemen who have resisted the request of the British Medical Association to resign their seats on the Advisory Committee. The reasons adduced by Dr. Addison and Dr. Harford, published in your last issue, are, in my opinion, weighty and unanswerable. Doubtless these men will be dubbed potential blacklegs by extremists, but they can afford to treat such nomenclatures with contempt. I feel confident that their conduct will meet with the approval of a large section of the profession who place citizenship before selfishness and political partisanship. It is idle to deny the fact that a considerable amount of the unreasonable opposition to a settlement must be attributed to the bias of a faction, whose motive is the downfall of the Chancellor and not the interest of the general practitioner. Personally, I decline to participate in this unworthy endeavour. The Chancellor desires to treat us fairly, consistent with his position as guardian of the public purse. I think the time has come when reasonable counsels should prevail, and that the moderate section of the profession must insist on a settlement without delay, in spite of the fatuous resolution passed at Liverpool. If a card vote of the whole profession were taken, one may with confidence predict that a majority would be in favour of a settlement upon a fair basis—i.e., a capitation fee of 7*s.* 6*d.*, including medicine, for ordinary domiciliary attendance. It may safely be stated that a great many prospective occupants of the ultimate trench are not paid at the above rate at present by their private patients. One's experience of meetings is that a considerable number of men are cowed, and vote against their consciences: "peaceful persuasion" looms ahead and saps their independence.

Unfortunately, the British Medical Association has, by the Liverpool resolution, put itself out of court, and forfeited its right to continue negotiations; therefore, apparently, the function of intermediary must devolve upon some other body. Mr. Masterman, speaking on behalf of the Government, has explicitly stated that the Association's decision would be regarded as final. If the gentlemen now ruling the Association persist in their irreconcilable attitude, it is perfectly clear that a schism of the utmost magnitude will inevitably result, ending in the disruption of the Association and the ruin of many practitioners.

As to the alternative, Public Medical Service Scheme, it is doubtful whether Parliament would tolerate a scheme dealing with the national health which savoured of syndicalism.

I am, Sir, yours faithfully,

Mile End, August 20th, 1912. W. OWEN WILLIAMS.

To the Editor of THE LANCET.

SIR,—From the beginning I have read the leading articles in THE LANCET which have dealt week by week with the position of our profession under the National Insurance scheme, and have followed closely your reviews of the changing situation and your words of guidance and of warning as each critical phase arose. I think that the profession owes much to THE LANCET for the judicial and independent attitude which it has maintained through this long and anxious period, and for constantly bringing its readers back to the main issues. I can well understand the pressure that must have been brought to bear upon you to lean towards one extreme view or another and support some policy which could not be maintained in the light of later events.

But, although I see that clear leadership is difficult when everything is still so chaotic and uncertain, I think the present moment is one at which we must ask for more guidance from you. I belong to the large body of medical men who are all for professional unity but have an innate dislike for trades unionism.

It seems to me that the British Medical Association, having decided to place itself outside the Act so long as the Act is unacceptable to the profession, could not reasonably let its nominees stay upon the Advisory Committee. The other medical members of that committee were not in the same position, and I respect both those who resigned at the request of the Association and those who could not see their way to do so. If the Association were still represented officially upon the Advisory Body of the Commissioners, that would surely show that the breaking off of negotiations was a mere tactical move and not a serious step taken with a definite intention. The Advisory Committee is a statutory body for helping in the administration of the Act. The Association has, at least for the present, washed its hands of the Act; how, therefore, could it remain officially represented in the administration of that Act?

It is nonsense to talk as party papers do about medical men "disobeying the law." They are not refusing to pay their personal contributions or to lick stamps; they are merely refusing the Government's invitation to help in the administration of a law so long as that law fails to meet medical requirements.

If the Commissioners cannot produce satisfactory regulations they will have to pay over the medical benefit money to the insured, for they cannot at present create a whole-time medical service. The British Medical Association, so I understand, foresaw this when it broke off negotiations, and it is getting ready to provide a proper public medical service outside the Act, which insured persons will have to make use of if medical benefit is suspended. The task of preparing a general scheme which can be adapted throughout the country to suit varying local requirements is, of course, very difficult, but I see no reason why it should not be accomplished, provided we all work together and believe in ourselves.

I do not by any means approve of everything that the British Medical Association has done, but, as you have said, it is the only organisation through which the profession can express its demands or administer a scheme of public medical service outside the Act. I think it is our duty, members and non-members alike, to do all in our power to help the Association to organise such a service, and I feel strongly that success will follow if THE LANCET encourages loyalty to the Association whilst this business is in hand. There are many moderate men like myself within and without the Association, and the line you take up will, I believe, make all the difference between failure and success. I think that if we all stand together now such a service could be set up and worked satisfactorily. Let us concentrate on that. If we succeed in establishing an efficient service adaptable to local requirements and fair to profession and public alike, we shall be in a very strong position; and I have little doubt that in the course of time the Commissioners or the Government in power would feel obliged to save the medical side of the Act by approaching the Association with a view to taking over its public medical service as a going concern and dovetailing it into the Act; whether by the issue of new regulations or by the passing of an amending Act matters little to us.

I put these disconnected views before you, Sir, in the hope that you will deal with them on their merits, and, in so far as they appeal to you, will make them your own.

I am, Sir, yours faithfully,

August 20th, 1912. TELEMACHUS.

*** We must all await the issue of the regulations with what patience we can.—ED. L.

To the Editor of THE LANCET.

SIR,—During the long and arduous fight to which the medical profession has been committed in Great Britain, since Mr. Lloyd George launched his Insurance measure, it has been interesting to read the comments which have been made from time to time by the leading medical journalists of America, and not a little comforting to find that they are in sympathy with the principles underlying the claims of their British colleagues. The *New York Medical Record*, August 3rd, 1912, has a leading article entitled "The

Medical Revolution in Great Britain." The actual subject of the article is the recent refusal of the Representative Meeting of the British Medical Association to accept the Act as it stands. The writer, standing at some distance from the conflict, perceives the fact which is in danger of being lost sight of by the protagonists, that the chief defect in the medical service proposed by the Government is not the rate or method of payment, but the control of the profession by Friendly Society officials. He rightly says that it is this feature of the medical benefit section of the Act which is most bitterly resented by the profession. The capitation fee of "two dollars and ten cents," not including extras and medicine, is regarded as reasonable, and the writer says that when the cost of the medical man's education and the responsibilities of practice are taken into account the assurance of Mr. Lloyd George in expecting him to become absolutely the servant of the public at a remuneration of less than $1500 a year is nothing less than remarkable; especially in view of the sum of $2000 per annum paid to each member of the House of Commons for services requiring no special education and to a great extent perfunctory. One of his comments is particularly gratifying. He says that "a notable feature of the situation is the sane, temperate, and dignified manner in which the question has been discussed by the leading medical journals of Great Britain—in striking contrast to the heated appeals to party and class prejudice made by politicians responsible for the measure and by the lay journals interested in popularising their statements." The fact that the struggle for reasonable conditions of service is being watched by our colleagues in America with close attention should heighten the sense of responsibility with which the British profession is carrying on its controversy with the Government; for it is a reminder that whatever the organisation of medical service issuing finally from the struggle, it will stand as a precedent to be copied more or less closely in other countries where hitherto no such organisation has been set up.

I am, Sir, yours faithfully,

BRISTOLIAN.

To the Editor of THE LANCET.

SIR,—One aspect of the many schemes put forward for dealing with tuberculosis under the National Insurance Act has struck me very forcibly. In almost every case—in counties, at any rate—the medical officers of health (and, owing to the absence of medical men on the Insurance Committees, they are having things all their own way) recommend, with sublime modesty, that they be appointed "chief tuberculosis officers." The plea they urge—and how well they know their councils!—is economy. The result will be that in tuberculosis work, as in school medical work, the junior appointments will be blind-alley appointments for whoever takes them up. The medical officer of health is to be not only medical officer of health, but also chief tuberculosis officer and chief school medical officer, and neither of the latter will be held qualified to be a medical officer of health.

Further comment is needless. The best class of men, however, will hardly take up these appointments, or, having been induced to accept them, will be unlikely to retain them when they realise the facts as to the prospects of advancement to a responsible post. Coöperation can be secured without making a demi-god of the medical officer of health (who cannot be an expert in all things) and incidentally increasing his salary at the expense of those actually doing the work.

I am, Sir, yours faithfully,

August 13th, 1912. D.P.H.

THE TREATMENT OF ANAPHYLACTIC SHOCK.

To the Editor of THE LANCET.

SIR,—Our attention has been drawn to Dr. T. P. Berry's criticism of our letter in your issue of June 8th. We still think we were justified in regarding as "anaphylaxis" the grave condition our subject of Graves's disease suffered from after treatment with thyroidectin. May we refer briefly to the following significant features in the case? 1. Dr. Berry's admission that the patient exhibited marked intolerance to thyroidectin from the first. He "found it necessary to reduce the dose by one-half." 2. The condition we regarded as anaphylaxis did not follow any undue exertion (as Dr. Berry suggests), but occurred at a time when the patient was being confined rigidly to bed. 3. The sudden onset of a series of symptoms and signs, which faithfully accorded with what has been described as anaphylaxis, whether occurring in man or in animals.

On May 29th, after some 50 grains of thyroidectin had been taken in the course of several weeks, we found the patient suddenly confronted with intense distress in her breathing, which was shallow, irregular, and quick, numbering 90 per minute. There were intense lividity of the skin, acute pain in the epigastrium, marked tenderness over the region of the liver, intense icteric staining of the conjunctivæ, and persistent vomiting and diarrhœa. In addition all the signs of severe shock were present. There was great coldness of the periphery, an anxious expression of the face, and a marked fall in the peripheral blood pressure. The pulse was very irregular and quick, numbering 160 per minute. The condition suggested to all her friends, to us, and to the patient herself, that death was imminent. Dr. Berry suggests that the condition was one of simple heart failure. We think there is evidence in support of our diagnosis of anaphylaxis. According to Schulz and Jordan this grave condition is caused by the liberation of toxic proteins in the blood. These proteins produce spasm of the muscle fibres in the walls of the bronchi and by folding of the mucosa the lumen comes to be partially or completely occluded, with resulting asphyxia. In like manner (as a recent annotation in THE LANCET suggests) the proteins cause spasm in the larger arteries, which leads to a marked fall in the peripheral blood pressure. The condition of our patient showed evidence of such a series of events. The most marked features present were the sudden onset of respiratory embarrassment and the great fall in the blood pressure in the peripheral vessels.

With regard to the treatment we instituted with complete success, we consider that it goes far in supporting our diagnosis. The reduction of the toxicity of the blood that occurs in cases of uræmia and eclampsia after venesection, and the marked increase in the agglutinative power of the serum seen in typhoid patients after small hæmorrhages, led us to try venesection as the most efficient means in our power of reducing the toxicity of the blood in our anaphylactic patient.

The significant fact is that not more than 6 oz. of blood were withdrawn from the vein. The almost instantaneous relief that followed was, in our opinion, greater than can be explained by the mere mechanical effect exercised on an engorged right heart by the withdrawal of such a small quantity of blood. It seemed more likely that it acted by reducing the toxicity of the blood to an extent sufficient to relieve bronchial and arterial spasm. The administration of adrenalin chloride solution subsequently quite efficiently raised the peripheral blood pressure. We are glad to have Dr. Berry's assurance that further venesection was not required. The condition is now apparently that of uncomplicated exophthalmic goitre. We are content to leave to your readers the decision as to whether our diagnosis of anaphylaxis was justifiable. The line of treatment we have suggested may, in any case, stand as worthy of trial in cases of anaphylaxis; and we think it might with profit be made the subject of experiment on animals.

We are, Sir, yours faithfully,

JOHN R. O'BRIEN, M.D.,
H. M. WILSON, M.B.

Glasgow, August 14th, 1912.

THE PRE-OPERATIVE DIAGNOSIS OF APPENDICITIS AND THE DORSAL METHOD OF EXAMINATION.

To the Editor of THE LANCET.

SIR,—Will you permit me to dispel any misconception which might arise from the short notice given of the subject on p. 448 of your last issue? The dorsal method does not profess to be an alternative for, or to be independent of, the present routine of diagnosis; it is merely complementary to it. It is specially concerned with those cases which have been so far diagnosed as to raise the question of operation, because they call for "all" the evidence and therefore render a dorsal examination indispensable. The following points

need to be re-stated to bring that brief account into harmony with the facts which I have observed: (1) the subresonant dulness normally found over the tuberosity of the ilium cannot be taken to indicate the absence of appendicitis, and could only suggest its presence if that dulness had ceased to be normal and were abnormally intensified; (2) the occurrence of a resonance replacing the normal dulness of the "posterior iliac patch," though strongly corroborating any suspicion of an appendicial complication, is in itself merely indirect evidence; (3) positive evidence of abnormality is usually afforded, not by the posterior iliac patch, but by some adventitious dulness arising at the immediately adjoining surface right or left of it—namely, in the great majority of cases at the iliac surface. Retro-cæcal abscess is answerable for the adventitious dulness in the degree of frequency with which it occurs. But taking all cases the other results of appendicitis, such as inflammatory thickening, adhesions, and various complications, easily detected, though, of course, not to be differentiated by the pleximeter single handed, outnumber by far the instances of suppuration.

I am, Sir, yours faithfully,

Upper Brook-street, W., August 18th, 1912. WM. EWART.

FLEMING'S (HECHT'S) MODIFICATION AND THE WASSERMANN TEST.

To the Editor of THE LANCET.

SIR,—As my name and the work done by me at Haslar has been frequently brought into the controversy that has lately been going on in your paper, I should be glad if you would kindly allow me to make a few further remarks. Up to the end of 1910 I gave the results and conclusions arrived at from 1100 cases treated.

During 1911 the same system was carried out—namely, a preliminary test of all sera by Fleming's method a few hours after the sera were taken, and a complete Wassermann of the same sera the following day. A syphilitic liver antigen was used for the Fleming and a congenital liver antigen for the Wassermann, both being very good, but, of course, not quite the same.

I take it as most important for the Fleming method that the blood shall be tested a few hours only after being taken, and that the antigen shall be well controlled with both normal and syphilitic sera; and I am also convinced that accuracy of results comes by increasing practice. It is, I think, unfair to criticise the method from the first 100 cases or so. In the present series I still found about 10 per cent. of sera failed to hæmolyse the control tube—namely, were deficient in hæmolysin for sheep's blood, but I did not, as I might, re-test them by adding known normal hæmolytic serum, as recommended by Fleming, having the Wassermann test to work by. These cases are not included in the total. The results of the year were: in 916 cases which were compared with the Wassermann, 858 agreed with the Wassermann, 58 disagreed. Of these, 38 gave a positive result where syphilis was, or had been, present, the Wassermann being negative; 3 gave positive results in mental cases, probably syphilitic; 10 gave a negative result in syphilic cases; 7 gave a positive result where no history of syphilis or sign of syphilis was noted clinically (by Staff Surgeon T. B. Shaw, under whose care most of the cases were).

Thus out of 916 cases 899 were probably correct. The 7 negative cases were: 1, aortic aneurysm; 2, arteriosclerosis; 3 and 4, cases of chancroid; 5 and 6, cases of chancroid and gonorrhœa; and 7, a case of chancroid sent in as syphilis. Though in all these the clinician stated that the cases were not syphilis, none of them are conclusive evidences against the accuracy of the test. For from experience where many tests have been made an early positive Fleming has been followed by a later positive Wassermann. My own personal opinion is that it is wiser from a diagnostic point of view to be guided by the Wassermann, but when there is a question of marriage or in the early cases when the spirochætæ cannot be observed by the dark ground illumination method, a positive Fleming is an extremely important indication necessitating further tests.

The following table giving the results of two years' work with the Wassermann test is of interest.

Cases.	—		Positive.		Negative.		Percentge.	
	1910.	1911.	1910.	1911.	1910.	1911.	1910.	1911.
Syphilis I.	143	117	106	90	37	26	74	76·9*
,, II. ...	371	320	348	740	23	80	93·5	90
,, III. ...	64	76	57	69	7	7	89	90
Latent	54	46	25	14	29	32	46	30
Parasyphilis ...	13	7	13	7	—	—	100	100
Chancroids	219	121	1	0	218	121	99·5	100†
Gonorrhœa	23	19	0	0	23	19	100	100
Other diseases ...	113	102	3	3	110	99	97·4	97
Total ...	1000	1308	553	923	447	384	—	—

* Positive. † Negative.

The three positive cases in 1911 were cases of malaria with recent fever. The three positive cases in 1910 were two malaria and one malignant disease of the liver. The results of this two years' work with 2308 cases accord very closely one with the other. The slightly higher percentage of negative reactions in 1911 for secondary syphilis were due to the action of "606" inducing an earlier negative Wassermann.—I am, Sir, yours faithfully,

P. W. BASSETT-SMITH, C.B.,
Fleet-Surgeon, R.N.

R.N. College, Greenwich, August 6th, 1912.

A PROPOSED PUBLIC DENTAL SERVICE.

To the Editor of THE LANCET.

SIR,—When, as far back as 1889, I proposed the formation of a public medical service, I suggested that it should contain a dental department. This failed to be done. I now propose that dentists establish a dental service. One has been formed at Brighton in 1907. A society to which five of us act as M.O.'s has a dentist (with graduated scale of fees) attached. Part 29, Schedule 4, of the Insurance Act provides for dental treatment as an "additional benefit." Already a fair number of local educational authorities have appointed a dentist to a dental clinic, and it is probable that if the dentists fail to establish and control a dental service of their own, every educational authority will have its dental clinic.

I am, Sir, yours faithfully,

Liverpool. R. R. RENTOUL.

THE ORGANISATION OF SANATORIUM BENEFIT IN BRISTOL.

To the Editor of THE LANCET.

SIR,—In setting up a coördinated system for the prevention and treatment of tuberculosis the local authorities of Bristol are in one sense fortunate that there are already institutions which may be utilised to form parts of an organisation such as has been recommended by the Local Government Board in its papers dealing with the application of sanatorium benefit. In another sense, however, these institutions introduce difficulties into the task. There is the Winsley Sanatorium, near Bath, financed on voluntary lines, but receiving its principal subscriptions from various public bodies; of these the Bristol city council, which maintains about a third of the beds, is the chief. It is not clear at present what will happen to this institution, though it seems likely that the existing accommodation, together with the very considerable extensions resolved upon before the influence of the Insurance Act was felt, will be largely, if not wholly, shared between the corporations of Bristol and Bath and the Wiltshire county council. In addition to this sanatorium, the Bristol corporation, or rather its health committee, has under consideration the erection of another upon a valuable site which is the property of the city. The other institution, which may possibly be utilised by the local authorities, is the Bristol Dispensary for the Prevention of Consumption. This is also supported by voluntary contributions. It has only been in existence six months, and the funds at its disposal suffice for its maintenance during another few months. Owing to the fact that

admission to the dispensary is conditional on the recommendation of a medical practitioner, the interest of the local profession has been to some extent secured. The Provisional Insurance Committee of the city, however, offered a sum of £200 or so in return for treatment of applicants for sanatorium benefit during the ensuing six months; but as acceptance of this offer implied abrogation of the conditions of admission referred to above, the dispensary committee was compelled to decline. There is, however, no doubt that this dispensary will eventually become one of the two which Bristol is expected by the Local Government Board to maintain. The other dispensary is to be set up by the health committee of the city council, with a whole-time officer in charge. Beds for advanced cases will possibly be provided by conversion of a hospital now used occasionally for the notifiable fevers. The local profession has, so far, not been invited to express an opinion as to its relations with this organisation, but since the success of any scheme for the suppression of tuberculosis depends absolutely on their coöperation, it is to be hoped that this oversight will be rectified before it is too late.—I am, Sir, yours faithfully,

G. P.

WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

The Baths of Bath.

AT a meeting of the baths committee of the Bath corporation held on August 14th it was decided to recommend the city council to accept, subject to safeguards, the offer of the Radium Development Syndicate, with Sir W. Ramsay as its adviser, to lease the bathing establishment, antiquities, pump-room, &c., and to develop them at an expenditure of not less than £250,000.

The Exmouth (Devon) Waterworks.

The new waterworks for Exmouth, situated at Dolton, were formally opened on August 6th by Lady Clinton. The cost of the undertaking has been about £14,518. The whole of the land and way-leaves for the waterworks have been given by Lord Clinton.

Enteric Fever at Barnstaple.

During the present year there have been about 28 cases of enteric fever at Barnstaple, 12 of which have occurred during the past six weeks. Dr. S. W. Wheaton, of the Local Government Board, who has made an inquiry into the matter, in a recently issued report states that the condition of the river Taw favours the spread of any enteric fever introduced into Barnstaple. This river receives the sewage from the borough of Barnstaple, and the estuary has the untreated sewage of Bideford, Appledore, and several small villages. Dr. Wheaton alludes to the danger of eating shellfish gathered from the sewage outfalls, and condemns the eating of imperfectly cooked "dabs and flounders" which are caught in quantities in the same vicinity. Dr. Wheaton mentions a plant, found on the rocks at the mouth of the Taw, where the river is polluted by sewage, which is boiled and used as an article of food.

The Sewerage of Bath.

The Bath sewerage disposal committee has accepted a tender of £21,251 for the sewerage of Twerton and Weston.

The Dorset County Council and Tuberculosis.

The Dorset county council has decided to appoint a whole-time officer, under a scheme prepared by the county medical officer of health, for dealing with tuberculosis. Dispensaries will be instituted, but sanatoriums will be deferred until satisfactory terms can be arranged with the Government.

Death of Dr. Winfred Benthall.

Dr. Winfred Benthall died suddenly at his residence, Staplake House, Starcross, Devon, on August 3rd. The deceased graduated as M.A. and M.B. at Cambridge in 1881. He had previously taken the M.R.C.S. in 1879 and the L.S.A. in 1880. He received his medical education at the University of Cambridge and St. Thomas's Hospital. Dr. Benthall was for several years in practice at Derby, and was on the honorary staff of the Derbyshire Royal Infirmary, being consulting physician to that institution at the time of his death. He retired from active work about four years ago, and purchased Staplake House, Starcross, for his residence. He took a great interest in all local matters, and was particularly active in the matter of the erection of small houses for the poor. He will be much missed in Starcross, especially by the poor, to whom he was a good friend, and much sympathy is felt there for his widow.

A New Hospital for Fowey (Cornwall).

The foundation-stone of a new cottage hospital for Fowey was laid on August 14th by Mrs. Treffry, of Place, who gave the site. The building is estimated to cost about £2000, about £1100 of which have been obtained. It will contain three wards—a male ward with four beds, a female ward containing two beds, and a private ward. There will also be an operating theatre, committee room, nurses' apartments, &c.

August 20th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Census of Glasgow.

THE medical officer of health of the City of Glasgow, Dr. A. K. Chalmers, has just issued a very illuminating report on the census of Glasgow for 1911 in all its bearings. The population within the present area of the city has increased during the decade 1901–11 from 775,594 to 784,496—an increase of only 8902 persons, or 1·15 per cent., on the 1901 population. During the preceding decade (1891 to 1901) the increase amounted to 103,639—an increase equal to 15·75 per cent. of the population at the beginning of that decade. It is interesting to note that public institutions, such as infirmaries, &c., number 68 in the present year as compared with 59 in 1901; while the occupants have increased from 19,347 to 23,818, or by 23·1 per cent. It is a somewhat unsatisfactory feature that of the total increase in the population during the decade of 8902 persons, so large a proportion belong to a class who do not as a rule fulfil the usual responsibilities of citizenship. The occupants of Poor-law institutions, for example, have increased by 1789, or 57·8 per cent.; while common lodging-houses, of which there are now 30 as compared with 25 in 1901, have a population of 8572, or 15·3 per cent. more than ten years ago. Together the occupants of Poor-law institutions and common lodging-houses form almost one-half of the total institutional population. It is an interesting fact that there are 106 females to every 100 males, compared with 104 ten years ago, but this is probably to be explained by the greater emigration of males during the decade. Another interesting feature is the fact that at ages under 25 the proportion of both sexes to the population shows a continuous reduction during several recent enumerations, so that instead of forming 55 per cent. as in 1881, they now form only 50·52 per cent. It is obvious thus that as a population Glasgow is becoming older in the literal sense in which the phrase is applicable to the individual. The principal factors contributing to this change are the falling birth-rate and death-rate, the reduction in the former tending to a lessening of the number of persons living at the lower ages, while the improvement in the latter has conserved the lives of adults. During the last decade the reduction in the birth-rate has been associated with an even greater reduction in the death-rate. Another point of interest is the average size of house and average number of occupants. The average house in Glasgow now contains 2·5 rooms, with an average of occupants of 4·6, and average number of persons per room of 1·8, the comparative figures for 1901 being 2·5, 4·7, and 1·8. There has thus been a reduction in the average number of persons per house and per room, but in contrast there has also been recorded a reduction in the size of house, as indicated by the average number of rooms.

University of St. Andrews: Honorary Degrees.

In connexion with the visit to Dundee in the beginning of September of the British Association for the Advancement of Science, the Senatus of the University of St. Andrews has resolved to confer the degree of LL.D. upon (among others) Giulio Fano, Florence, professor of physiology; Marcel Eugene Emile Gley, professor of general biology in the College de France; H. J. Hamburger, Groningen, professor of physiology, and director of the Physiological Institute in the University of Groningen; Paul Heger, honorary professor

of physiology in the University of Brussels; Charles Julin, professor of zoology in the University of Liége; Hector Frederik Estrup Jungersen, professor of zoology in the University of Copenhagen, and director of the Museum; Heinrich Gustav Kayser, professor of physics, University of Bonn; Albrecht Kossel, professor of physiology in the University of Heidelberg; Franz Karl Julius Keibel, professor of comparative embryology in the University of Freiburg; Professor D. Ferdinand Lindermann, Munich; S. J. Meltzer, professor of physiology and pharmacology in the Rockefeller Institute, New York; and Hans Horst Meyer, professor of pharmacology, and director of the Pharmacological Institute in the University of Vienna.

Return Cases of Scarlet Fever.

Dr. James P. Watt, medical officer of health of the county of Aberdeen, in an interesting report to the Deer district committee on "Return Cases of Scarlet Fever," remarks that 10 such cases occurred in connexion with Strichen Hospital during 1911, the intervals between the dates of discharge and the beginning of the illness of the second cases being 10, 5, 6 (twice), 9, 7, 20, 5, 21, and 27 days respectively. Seven out of the 10 cases occurred in November and December, and the increased number of return cases in these months coincided with (1) a greater number of patients in the wards, and (2) a more severe type of disease. The cases were septic, with a number of discharging ears and noses. Dr. Watt remarks that such discharges are frequently associated with return cases, the discharge often starting afresh after the patient has returned home, possibly through exposure to cold. Efforts to keep patients in convalescent wards for a week before discharge have had little or no effect in diminishing the percentage of return cases. Dr. Watt recommended the distribution of leaflets with instructions to parents as to precautions to be used for a week or two after the return of scarlet fever patients, and particularly as to what to do should a nose or ear discharge start afresh. The committee approved of the suggestion and authorised its carrying out.

Bursary for the University of Aberdeen.

By the will of the late Dr. Alfred Gilchrist, M.A., Aberdeen, part of the residue of his estate is to be used to establish a medical bursary for students at the University of Aberdeen. The bursary is not to exceed £20 yearly and is to be known as the Dr. Isaac Gilchrist Bursary in memory of his brother. The bursary is to be open to men and women, and is to be obtained by competition except in the case of students of the name of Gilchrist and of Fraser. Deceased also directs the University Court that it shall cause a lecture to be delivered yearly by the professor for the time being of materia medica of the University of Aberdeen. Such lecture shall be open to the general public free, and the lecturer shall be paid a sum not exceeding £20 for each lecture.

August 20th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Women's National Health Association and the Conjoint Committee.

IN reply to the letter from the Women's National Health Association, which was published in the last issue of THE LANCET, the Medical Conjoint Committee's Sanatorium Subcommittee state that they were not aware that the "scheme" adopted by the Women's National Health Association was submitted to county councils for consideration before the conference, so that their "representatives" might be instructed as to how they should voice the views of the councils they "represented." The subcommittee would be glad to know who the "medical members of the Committee of Supervision" of the Women's National Health Association are, and by what authority they represent the views of the profession, as is implied in the statement authorised by the President of the Association. As to the recommendations of the Health Conference, it is pointed out that the local authorities had, without being consulted in the matter, been deprived of £25,000 out of funds set aside by Parliament for their use, that this sum had been handed over to the Women's National Health Association, and that the proposed temporary works were to be provided out of this sum. Many present at the Health Conference thought, says the subcommittee, that the "temporary provision" recommended to the local authorities would be provided by the Women's National Health Association from their own funds, would be hired to the local authorities, or arranged for in some other way. Further, in some instances the works undertaken by the Women's National Health Association seem to be rather of a permanent than a temporary character, while the county councils have not in all cases been consulted as to whether the sites and the buildings are such as they would approve of as permanent undertakings. The subcommittee consider that this condition of affairs is not in the interests of either the public or the profession. The organising secretary of the Women's National Health Association forwarded a list of the medical members of the Committee of Supervision as requested, and pointed out, in answer to the above communication, that every penny of the £25,000 entrusted to the association will be spent for the benefit of patients sent by county councils or County Insurance Committees to the institutions established by this grant; and the property purchased for the purpose is vested in trustees who hold that there was a distinct intention that voluntary associations should be given a share of the grant if they were in a position to use it so as to forward the application of the tuberculosis provisions of the Insurance Act.

The Insurance Act.

On August 17th, at a meeting of co. Tyrone practitioners held in Omagh, a resolution was passed pledging the medical men in co. Tyrone not to accept any appointment in connexion with the sanatorium benefits of the Insurance Act, and not to have any professional relations with any practitioner accepting such appointment, unless and until the conditions and duties of such appointment are approved by the Conjoint Committee of the British Medical Association and the Irish Medical Association, and by this committee. Mr. J. J Todd (Omagh) and Mr. T. D. Browne (Benburb) have resigned their position on the co. Tyrone Insurance Committee. At a meeting of the Local Medical Committee of co. Antrim held on August 16th in Ballymena it was agreed unanimously to adopt a resolution passed by the medical delegates in Dublin in June last. It was also decided to transmit a copy of the resolutions referring to appointments of tuberculosis medical superintendents passed by the Irish Conjoint Committee to the county council of Antrim. Further exception was taken to the action of the Insurance Commissioners in appointing as one of the two medical officers of the Insurance Committee a doctor who was not nominated by the profession, and it was decided to ask that gentleman to resign.

Census Returns for Belfast and Neighbourhood.

Belfast is situated between the two counties of Down and Antrim, and the fully published Census returns of these parts of Ireland are noteworthy. The total population of Belfast on April 1st, 1911, was 386,947, an increase of 10·8 per cent. over the figures of 1901. In co. Antrim since 1901 the population has decreased from 196,090 to 193,864, or 1·14 per cent., which is less than the average for all Ireland. In 1901 in co. Antrim 1 person in 63 received Poor-law relief; in 1911 the number had sunk to 1 in 79. The marriages in co. Antrim were 5·4 per 1000 inhabitants, against 5·1 for the whole of Ireland. The birth-rate was 23·6 per 1000, the rate for Ireland being 23·1; and the deaths were 17·1 per 1000, the rate for the whole of Ireland being 17·3 per 1000 of the population. In co. Down the population was 204,303, as against 205,889 in 1901, a nominal decrease of only 0·7 per cent. This decrease is almost the lowest in Ireland. In 1901 there was 1 person in every 75 receiving Poor-law relief, while in 1911 the rate had fallen to 1 in 116. In Belfast the average number of persons in each house is five. 33·7 per cent. of the families live in houses of less than five rooms, of whom only 0·6 per cent. were occupiers of one room, The total number of people in Belfast when the Census was taken in receipt of poor relief was 3629, and of that total 3359 were inmates of the workhouse; only 270 were in receipt of out-door relief—that is, 270 out of a population of 389,247, a clear proof that everyone in Belfast who is willing to work can find employment. The marriage-rate in Belfast was for the ten years ending March, 1911, 7·6 per 1000, as against

5·1 per 1000 for the whole of Ireland, or roughly 50 per cent. greater than the marriage-rate of the country. The birth-rate in Belfast for the past ten years was 30·4 per 1000, as against 23·1 per 1000 for the whole of Ireland. The decennial death-rate of Belfast does not compare so favourably with that of the country, being 20·1 per cent. as against 17·3.

Belfast Asylum.

The report for 1911, which has just been issued, shows that 233 admissions took place during the 12 months. The total numbers under treatment—fresh admissions and those remaining from the previous year—were 1474, or 17 per cent. less than during 1910. During the year 130 patients were discharged, of whom 87 were recovered. The gross expenditure for the financial year ended March 31st, 1912, amounted to £28,454 8*s.* 7*d.*, which, after deducting receipts from paying patients and miscellaneous sources, gives the net capitation of £21 1*s.* 3*d.* per annum. Attention is drawn to the progress made towards the completion of the villa colony, and it is said that £88,500 will still be necessary to complete the entire villa colony scheme at Purdysburn, and to enable all the patients to be transferred from the old asylum. It would be interesting to have in round numbers the total amount of money already expended on this villa colony scheme at the Purdysburn Asylum. People in Belfast are beginning to ask when is there to be an end to this huge and lavish expenditure on an institution in which, after all, the results of treatment are, comparatively speaking, so poor, while, on the other hand, not a penny is spent on improving the condition of the overcrowded public schools, and so little being done for the stamping out of tuberculosis. This asylum report is interesting for its philosophic and theoretical speculations, but it would be greatly improved by details of more pathological work, especially when so much material is available. We need much more knowledge as to the pathological basis of the various forms of insanity.

August 20th.

CONSTANTINOPLE.

(FROM OUR OWN CORRESPONDENT.)

The Earthquake.

THE Turkish Empire has again been visited by a terrible earthquake. Constantinople itself, which seems to have been just at the periphery of the affected area, did not suffer very much, although the two severe shocks followed by a few slighter oscillations caused an indescribable panic. The population has not yet forgotten the calamity of 1894. In spite of the martial law confining people within doors after midnight, and in spite of the numerous well-armed patrols attempting to enforce the regulation, thousands of people stormed the public gardens and camped there for the remainder of the night. There were numerous affrays, but the military and police officials had to yield to the public terror. There was no loss of life in Constantinople itself, although the havoc wrought by the earthquake in different provinces is enormous. The exact extent of the cataclysm, as well as accurate numbers of victims, are not yet definitely known, but special commissions have been sent by the Government to the various places affected. The seismic movement that seems to have had its repercussion in many parts of Europe affected in Turkey alone an area of over 400 square miles. The whole Thracian coast, the Asiatic coast of Marmora, and many islands of the latter have suffered terribly. According to the latest estimates, there are about 5000 killed and 100,000 shelterless. On both sides of the Dardanelles over 50 villages were totally destroyed. The Dardanelles themselves and Gallipoli are said to be heaps of ruins; several lighthouses have disappeared, and thousands of houses have been razed to the ground, while much that was spared by the earthquake has been destroyed by fire. Near the village of Gano there existed a Mount St. Elia. This mount has now disappeared, giving place to a crater which swallowed all things around—houses, people, and cattle. The misery and distress of the remaining population of the visited places is impossible to describe. Thousands are naked and hungry and shelterless. The scanty provision sent by the Government is far too small. Help is being sent from all quarters, but the need is so great that desperate appeals continue. The seismic shocks have not yet entirely ceased; they recur from time to time, but with lesser severity. In some villages excavations have been begun and dead women embracing living babies have been brought to light. The configuration of the soil has altered appreciably in various quarters of the affected area. In Bulgaria the hot springs showed suddenly an abundance of water. On the Asiatic coast, on the contrary, numerous wells completely dried up, so that the remaining population suffer terrible thirst. The Government is sending large provisions of drinking water. On the Thracian coast and elsewhere long crevasses were formed which ejected for some time hot reddish liquids and sulphurous gases. The sea was broiling along the coast line in such a violent manner that the passing steamers could not possibly approach to render help. It was noticed that horses and cattle behaved in an excited fashion long before the earthquake and ran for miles maddened by fear. The burying of the bodies is now becoming an extremely difficult task. Their decomposition spreads a terrific stench, poisoning the atmosphere. Medical men have been sent in all directions, precautions are being taken to prevent disease, while the British and American colonies are doing their utmost in the work of relief.

August 14th.

UNITED STATES OF AMERICA.

(FROM OUR OWN CORRESPONDENTS.)

Defective Children in the United States.

Dr. Thomas D. Wood, of Columbia University, states that 15,000,000 of the school children of this country require medical attention. Some of Dr. Wood's conclusions are as follows. Several million children have two or more handicapping defects; 400,000 have organic heart disease; at least 1,000,000 have, or have had, tuberculosis; about 1,000,000 have spinal curvatures, flat foot, or other deformity; 1,000,000 have defective hearing and about 5,000,000 defective sight; about 5,000,000 are suffering from malnutrition; over 6,000,000 have enlarged tonsils, adenoids, or enlarged cervical glands; and over 10,000,000 have defective teeth, which are interfering with health.

Dr. Guiteras on the Plague Situation.

A resolution was introduced recently in the United States House of Representatives recommending an investigation of the sanitary condition of Cuba, in consequence of the existence of bubonic plague in Havana. Dr. Jean Guiteras, Director of Sanitation in Cuba, and formerly of the United States army, takes exception to this proposal on the ground that sanitary conditions in Cuba are not deserving of such drastic measures. Further, Dr. Guiteras charged the United States authorities with endeavouring to conceal the existence of plague in San Francisco, which city he declares to be the source of the Cuban infection. Conditions in Cuba, he says, are better than in the United States, which is rather a menace to Cuba through the epidemics of spinal meningitis, infantile paralysis, and small-pox. He also asserts that the Cuban sanitary authorities are in constant dread of small-pox infection from the United States, while the plague situation in both California and Porto Rico is causing them great anxiety. Assistant Director Edward Francis of the Hygienic Laboratory left Washington for New Orleans on August 3rd to assist in the warding off of plague. No new cases of plague were reported from Havana or Porto Rico during the week ending August 3rd.

Care of Infants in New York.

Notwithstanding that the summer of 1911 was unusual in its reduction of infant mortality, statistics of the New York Health Department show that up to August 3rd of this year there have been 526 fewer deaths of infants under one year of age than during the same period of last year. During July the milk-station enrolment increased from approximately 14,000 to 18,000. In the 55 stations controlled by the Board of Health the enrolment was increased during

the month of July from 8000 to 13,000. Out of this number only 8 infants died.

A Bill to Amend the Pure Food and Drug Law.

A Bill to amend the Pure Food and Drug Law, introduced into the United States House of Representatives, has been favourably reported on by the Inter-state Commerce Committee. This measure is designed to prohibit "false and fraudulent" curative claims on labels and is intended to meet a decision of the United States Supreme Court, that the putting forth of false and extravagant claims as to the curative properties of remedies is not a violation of the Pure Food Law.

Death of Dr. Frederick Beal.

Dr. Frederick Earl Beal, clinical professor of physical diagnosis at the New York Polyclinic Medical School and Hospital, died at the age of 44 from pneumonia on August 7th at the Polyclinic Hospital.

August 10th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Malaria in Bengal.

Major A. B. Fry, Deputy Sanitary Commissioner, Bengal, recently delivered an interesting lecture at the Town Hall, Darjeeling, to a crowded and appreciative audience, on malaria. His Excellency the Governor, the Maharaja of Burdwan, Sir William Duke, the Honourable Mr. P. C. Lyon, Mr. Stevenson Moore, Colonel G. F. A. Harris, I.M.S., and a distinguished audience were present. After giving a short history of the disease from the time of Hippocrates to the present day, the speaker dwelt at length on the connexion between elephantiasis in man and the culex mosquito, a fact which inspired Sir Ronald Ross with the idea that malaria likewise was due to inoculation by some sucturial insect. He next, by means of lantern slides, exemplified the life history of the malarial parasite, and from analogy proved that the paroxysms of fever occur just after the sporozoites have burst through the last host and individually attacked a number of fresh blood corpuscles. Out of the one and a half million deaths which take place annually in Bengal, malaria is responsible for only a quarter. The research committee was therefore at present engaged in determining, with regard to the spread of the disease, the exact manner in which the three factors work—namely, the number of anopheles existing in a particular locality, the number of the population already infected, and those not infected. Consequently, if the number of infected be reduced, it materially helps in the extermination of malaria.

Mosquito Brigades in Calcutta.

At a recent meeting the corporation considered the report from the health officer on the work done by the mosquito brigades in special districts. The areas had been mapped out and nearly all the tanks and ditches were being treated with kerosene under the supervision of the district medical officer. The health officer had gone over the districts and inspected the localities treated by the brigades, and was satisfied that they were doing good work in preventing malaria.

Irrigation and Malaria at Lahore.

It will be remembered that some years ago irrigation in Lahore Cantonments, or, as it was then known, Mian Mir, was stopped to carry out experiments in the extinction of mosquito breeding grounds. Opinions differed as to the success of the operations, but there was no question as to the consequent drying-up of the Cantonments, and the Upper Bari Doab Canal is now about to make a new distributary which will reopen irrigation in the Lahore Cantonments. Lahore has a population of 208,126, and in the year 1911 suffered from an outbreak of small-pox of moderate severity, causing 188 deaths. The chief causes of death, however, were, as usual in Indian populations, malaria and "fevers," which accounted for a mortality of 2999. Plague and cholera visited the city, but happily gained no footing. Dr. A. G. Newell, the health officer, is alive to the defects of vaccination as at present carried out, and recommends that revaccination be made compulsory. He also recommends that pulmonary tuberculosis should be made a compulsorily notifiable disease, and that funds be provided with which to administer tuberculin treatment. There were 577 deaths from phthisis during the year, a larger number than for any other disease, and there can be little doubt that a large proportion of this mortality is preventable. Notification is of the first importance to attain this end, and it is hoped that this measure, as well as revaccination, will before long be made compulsory.

A University for Burma.

The institution of a University for Burma would not have been unworthy of a place in the list of Durbar boons, but the announcement has only recently been made. Burma has lately been growing clamant on the subject of its wrongs, and the neglect of its interests by the supreme Government. It is pleasing to see one of its demands granted. With the prospect of at least four new Universities being started in the near future, no one can assert that the claims of higher education are now being neglected in India.

Calcutta Medical College.

The Governor and Lady Carmichael visited Calcutta Medical College recently.

Accident to Inspector-General of Civil Hospitals.

A few days ago Colonel Harris, Inspector-General of Civil Hospitals in Bengal, had a narrow escape from a terrible death. He was returning from Bogra, and was roused in the middle of the night by a station-master, to find that his saloon carriage was on fire. As he fled out of the carriage door the flames singed his face, his belongings were nearly all burnt, and the carriage itself was completely destroyed.

Temporary Delhi.

Some idea of the progress that is being made on the buildings in temporary Delhi may be formed from the fact that 130,000 bricks are being received and laid daily in masonry courses. The quarters for the clerical establishments are consequently springing up rapidly.

Cholera in Sind.

Four of the six districts in Sind are now more or less affected by cholera, besides the native State of Khairpur. The epidemic seems to be the worst in the Larkana district, where the *talukas* of Kakar and Mehar return the largest number of cases. It is the villages that are mainly affected, the towns being practically free. Precautionary measures are being adopted everywhere.

Bacteriology in India.

Arrangements are being made for the supply of anti-rinderpest serum to the Egyptian Government from the Indian Bacteriological Institute at Muktesar.

Malaria in the Punjab.

Application has been made to the Government of India for two years' extension of the appointment of medical officer in charge of the detailed investigation of malaria in the Punjab.

Proposed Hindu University.

The mission to the Punjab of the Maharaja of Dharbhanga, president of the Hindu University committee, has been eminently successful. Their Highnesses the Maharajas of Gwalior and Indore have each subscribed 5 lakhs to the funds of the proposed university, whilst His Highness the Maharaja of Kashmir has given an annual grant, the capitalised value of which comes to three lakhs and a half. It is expected that further announcements will be made shortly.

Nomenclature in the Army.

With reference to the recent changes of nomenclature of the Medical Services in India, a correspondent writes to the *Pioneer* as follows:—

> Any tendency of simplicity is always delightfully welcome in these days, and the results of the labours of the medical department by which the old terms P.M.O., A.M.O., &c., are to be replaced by the designations D.M.S., D.D.M.S., A.D.M.S., and finally D.A.D.M.S., will be hailed with joy. These terms are so delightfully reminiscent of the nursery! But why not carry the process a little further and have a real "Didums" or even a "Wouldums"? Poor "Dadms" is the bottom of the ladder, nearer the top his attributes have to be understood.

Deaths from Plague in India.

Deaths from plague in India during the week ended

July 6th amounted to 266 against 368 seizures. In the Bombay Presidency there were 82 fatal cases, in Madras 9, in Bengal 10, in Bihar and Orissa 26, the United Provinces 3, Punjab 50, Burma 60, and in Mysore 22.

August 1st.

Obituary.

JOHN JAMES CHARLES, M.D., M.CH. Q.U.I., D.SC. (HON. CAUSÂ), L.R.C.S. EDIN., F.R.S.E.

Dr. John James Charles, whose death occurred (as we announced briefly in our last issue) in his sixty-seventh year, at Portrush, co. Antrim, on August 10th, was born on Dec. 13th, 1845, at Cookstown, co. Tyrone. He was the eldest son of the late Dr. David H. Charles, J.P., and a member of a family several of whom (the late Dr. T. Cranstoun Charles, of St. Thomas's Hospital, the late Dr. Daniel Charles, of Bellaghy, co. Derry, and Sir Havelock Charles, K.C.V.O.) were or are distinguished members of the medical profession. He was educated at Queen's College, Belfast, and both in the arts and medical faculties he gained the very highest distinctions as a scholar and honoursman at his school and at the late Queen's University of Ireland. He obtained double first honours and two gold medals both at his B.A. and at his M.A. examinations. In 1865 he graduated as M.D. of the Queen's University of Ireland, and he subsequently pursued his studies at University College, London; at Edinburgh University, where for a period he was assistant lecturer on natural science; at Paris, Bonn, and Berlin. From 1869 to 1875 Dr. Charles was demonstrator and lecturer on anatomy and assistant to Professor Peter Redfern at Queen's College, Belfast. In 1875 he was appointed to the chair of Anatomy and Physiology in Queen's College, Cork, a position which he filled with great distinction, until he resigned in 1907. He was also a Fellow of, and examiner in physiology at, the late Royal University of Ireland. In 1882 the degree of Doctor of Science was conferred upon him by the late Queen's University of Ireland. In 1899 he was President of the Section of Anatomy and Physiology at the annual meeting of the British Medical Association. He was also a Fellow of the Royal Society of Edinburgh. He contributed valuable scientific papers to the periodical literature of his own special department of medicine, including "Researches on the Gases of the Bile" (*Pflüger's Archiv*, 1881, and *Journal of Anatomy and Physiology*, 1882), "Rupture of the Œsophagus" (*Dublin Quarterly Journal of Medical Science*, 1870), "On the Mode of Propagation of Nervous Impulses" (*Journal of Anatomy and Physiology*, 1879), "The Causes of Entrance of Oxygen into the Blood in the Lungs" (*Journal of Anatomy and Physiology*, 1900), and "Recent Advances in Physiology" (*British Medical Journal*, 1899), as well as numerous other papers in medical periodicals. Dr. Charles was twice married, and is survived by four sons and three daughters, with whom sympathy is felt in their bereavement. He was a man of thorough scientific tastes, a hard-working and painstaking teacher and professor, and in private life a man of the kindliest instincts.

Medical News.

FOREIGN UNIVERSITY INTELLIGENCE.—*Vienna*: The following have been granted the title of Extraordinary Professor: Dr. A. Fuchs, *privat-docent* of Neurology and Psychiatry; Dr. M. Hajek, *privat-docent* of Laryngology; Dr. v. Hammerschlag, *privat-docent* of Otology; and Dr. R. Weiser, *privat-docent* of Odontology. Dr. Alfred Ritter Decastello von Rechtwehr, Innsbruck, has been recognised as *privat-docent* of Medicine.

CENTENARIANS.—Mrs. Anna Bailey, of Falmouth, celebrated her 100th birthday on August 6th. The Rev. P. Carlyon, of the same town, entered his 101st year at Christmas last.

THE St. Thomas's Old Students' dinner will take place at the Hotel Cecil on Tuesday, Oct. 1st, at 7 o'clock for 7.30. The chair will be taken by the Right Hon. the Lord Mayor, Sir Thomas Boor Crosby, M.D., F.R.C.S.

THE DECREASING BIRTH-RATE IN PRUSSIA.—The problem of decreasing birth-rate is actively engaging the attention of the German Government, which views this symptom of civilisation with some concern. Already the authorities in some parts of Prussia have taken preliminary steps to combat the growing restriction in the number of children which is becoming evident in all classes of the population. It is the custom in Germany to publish in the daily papers a brief list of the local births, marriage notices, marriages, and deaths, furnished by the civil register office. As it has come to the knowledge of the authorities that the persons mentioned in these lists, whether as about to be married or already married, are flooded with circulars from persons recommending the use of appliances to prevent conception which they offer for sale, the authorities in two Prussian districts have forbidden the civil register offices to communicate the data referring to the customary notices of marriages and the contracted marriages to the newspapers. In this way it is hoped to prevent to some slight extent the direct incentive to shirk the burden of fatherhood or motherhood, which must naturally be the outcome of this form of commercial enterprise.

BOOKS, ETC., RECEIVED.

FUNK AND WAGNALLS COMPANY, New York and London.

Swimming Scientifically Taught. A Practical Manual for Young and Old. By Prof. Frank Eugen Dalton, P.S.A., Instructor in Scientific Swimming at the Dalton Swimming School, and Originator of the Dalton Method. Price 5s. net.

GREEN, WILLIAM, AND SONS, Edinburgh and London.

The Local Incidence of Cancer. By Charles E. Green, F.R.S.E. Price 1s. net.

GRIFFIN, CHARLES, AND CO., LIMITED, London.

The Main Drainage of Towns. By F. Noel Taylor, Civil Engineer, Member of the Institute of Municipal Engineers. Price 12s. 6d. net.

HILL, WALTER, 66–71, Southampton-row, London.

The Holidays. Where to Stay and What to See. Price 1s.

LIVINGSTONE, E. AND S., Edinburgh.

Public Health Law. An Epitome of Law Applicable to England and Wales and Scotland. By William Robertson, M.D. Glasg., D.P.H., Medical Officer of Health, Leith, and Archibald McKendrick, F.R.C.S. Edin., D.P.H., Medical Officer Jointly in Charge of X-Ray, Medical, Electrical, and Balneological Departments of the Royal Infirmary, Edinburgh. Price 5s. net.

ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH, New York.

Monographs of the Rockefeller Institute for Medical Research. No. 4. June 24th, 1912. A Clinical Study of Acute Poliomyelitis. By Francis W. Peabody, M.D., George Draper, M.D., and A. R. Dochez, M.D. Price not stated.

SCIENTIFIC PRESS, LIMITED, London.

Diseases of Women. A Handbook for Nurses. By Florence E. Willey, M.D., M.S., B.Sc. Lond., Assistant Physician for Diseases of Women and Obstetric Tutor, Royal Free Hospital; Examiner to the Central Midwives Board. Price 2s. net.

SMITH, ELDER, AND CO., London.

The Grouse in Health and in Disease. Being the popular Edition of the Report of the Committee of Inquiry on Grouse Disease. Edited by A. S. Leslie, Secretary of the Committee. Assisted by A. E. Shipley, F.R.S., Master of Christ's College, Cambridge. Price 12s. 6d. net.

STEINHEIL, G., Paris.

Les Origines de la Trépanation Décompressive. Trépanation néolithique, trépanation pré-Colombienne, trépanation des Kabyles, trépanation traditionnelle. Par le Dr. Lucas-Championnière, Membre de l'Institut (Académie des Sciences), Chirurgien Honoraire de l'Hôtel-Dieu, Membre de l'Académie de Médecine, Ancien Président de la Société Internationale de Chirurgie. Price not stated.

THIEME, GEORG, Leipzig.

Lehrbuch der Krankheiten des Säuglings. Von Dr. A. Lesage, Médecin des Hôpitaux in Paris. Uebersetzt und mit Anmerkungen versehen. Von Prof. Dr. Rudolf Fischl, in Prag. Price, paper, M.12; bound, M.13.

URBAN UND SCHWARZENBERG, Berlin and Vienna.

Maniach-Depressives und Periodisches Irresein als Erscheinungsform der Katatonie. Eine Monographie. Von Dr. med. Maurycy Urstein, Warschau. Price, paper, M.28; bound, M.30.

VACHER AND SONS, LIMITED, Westminster House, Great Smith-street, London, S.W.

The New Land Taxes and Mineral Rights Duty. The Land Union's Handbook on Provisional Valuations. Being General Advice to Owners of Land and House Property in Dealing with Valuations under the Finance (1909–10) Act, 1910, as amended by the Revenue Act, 1911. With Statutes and Forms. Price 3s. net.

WHITE, F. V., AND CO., LIMITED, 17, Buckingham-street, Strand, London, W.C.

The Hidden Fear. A Novel. By James Blyth, author of "The Peril of Pines Place," &c. Price 6s.

The Art of Golf. By Joshua Taylor. With a Chapter on the Evolution of the Bunker, by J. H. Taylor, Ex-Champion. Price 2s. 6d. net.

WILSON, EFFINGHAM, 54, Threadneedle-street, London, E.C.

A Guide to the National Insurance Act, 1911. With Notes and Index. By H. Wippell Gadd, of the Middle Temple and Western Circuit, Barrister-at-Law. Third Impression. Price 1s. net.

YEAR BOOK PUBLISHERS, THE, 40, Dearborn-street, Chicago.

The Practical Medicine Series. Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of Gustavus P. Head, M.D., and Charles L. Mix, A.M., M.D. Volume I. General Medicine. Edited by Frank Billings, M.S., M.D., and J. H. Salisbury, A.M., M.D. Series 1912. Price $1.50. Volume II. General Surgery. Edited by John B. Murphy, A.M., M.D., LL.D. Series 1912. Price $2. Volume III. The Eye, Ear, Nose, and Throat. Edited by Casey A. Wood, C.M., M.D., D.C.L., Albert H. Andrews, M.D., and Gustavus P. Head, M.D. Series 1912. Price $1.50. Price of the Series of 10 Volumes, $10.

ZANICHELLI, NICOLA, Bologna.

Attualità Scientifiche, N. 18. Ernesto Cavazza. L'Endoscopia del Sistema Digerente. Price L.3.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

BLEASE, ARTHUR TORKINGTON, M.B., Ch.B. Vict., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Medical Officer for the Altrincham District of the Bucklow Union.

BRACHI, F., M.R.C.S., L.R.C.P. Lond., has been appointed Senior House Surgeon to Grey's Hospital, Pietermaritzburg, Natal.

BUTT, F. J., M.B., M.S. Edin., has been reappointed Medical Officer to the Hoole Urban District Council.

DAVIS, EDWARD D., F.R.C.S. Eng., has been appointed Assistant Surgeon to the Nose, Throat, and Ear Department of Charing Cross Hospital.

DENNEHY, JOHN J., M.B., B.S. N.U.I., has been appointed Superintendent Tuberculosis Medical Officer for the County of Waterford.

FRASER, A., M.B., M.S. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Caistor District of the county of Lincoln.

GILLESPIE, J. R., M.B., B.S. R.U.I., has been appointed Medical Superintendent of the Tuberculosis Dispensary at Down County.

GREEN, REGINALD, M.D. Durh., has been appointed Medical Officer of Health to the Stroud Urban, Stroud Rural, and Nailsworth Urban Districts.

MACDONALD, D. M., M.B., B.S. Aberd., has been appointed Medical Officer to the Kennoway Parish Council.

MAGENNIS, E., M.D. R.U.I., has been appointed Medical Officer to the James-street District of the Dublin General Post Office.

MURPHY, ROBERT W., M.D., B.Ch., B.A.O., D.P.H. Dub., has been appointed Assistant Medical Inspector of Schools to No. 1 District of the North Riding, Yorkshire.

RADCLIFFE, A. H., M.B., B.S. Vict., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Garforth District of the county of York.

REDMOND, T. O'CONNELL, F.R.C.S. Irel., has been appointed Medical Officer to the Clontarf District of the Dublin General Post Office.

ROBERTSON, ARTHUR, M.B., B.S. Glasg., has been appointed Medical Officer of Health for the Burgh of Helensburgh.

WARREN, F., F.R.C.S. Irel., L.R.C.P. Irel., has been appointed Medical Officer to the Rathmines and Pembroke District of the Dublin General Post Office.

WEST, H. O., M.B., B.S. Lond., has been appointed Tuberculosis Officer for the County of Kent.

WHEELER, W. IRELAND DE C., M.D., B.Ch. Dub., F.R.C.S. Irel., has been appointed Medical Officer to the Central District of the Dublin Genera Post Office.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BANBURY, HORTON INFIRMARY.—House Surgeon. Salary £80 per annum, with board and residence.

BARNSLEY, BECKETT HOSPITAL AND DISPENSARY.—Second House Surgeon, unmarried. Salary £100 per annum, with apartments, board, and laundry.

BEDFORD COUNTY HOSPITAL.—Assistant House Surgeon. Salary £80 per annum, with board, lodging, and laundry.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House Surgeon. Salary £80 per annum, with board and laundry.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Senior House Surgeon. Salary £90 per annum, with board, rooms, and laundry.

BIRMINGHAM AND MIDLAND FREE HOSPITAL FOR SICK CHILDREN.—Resident Medical Officer and Resident Surgical Officer for six months. Salary £80 per annum each, with board, washing, and attendance.

BLACKBURN UNION.—Resident Medical Officer, unmarried. Salary £150 per annum, with apartments, rations, washing, and attendance.

BOOTLE COUNTY BOROUGH.—Medical Inspector of Scholars and Assistant Medical Officer of Health. Salary £250 per annum.

BRADFORD ROYAL INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with board, residence, and washing.

BRECONSHIRE, BRECON AND RADNOR ASYLUM, Talgarth.—Assistant Medical Officer. Salary £170 per annum, with board, apartments, washing, and attendance.

BROMLEY (KENT) EDUCATION COMMITTEE.—Part-time Medical Officers for Children's Ear, Nose, Throat, and Eye Defects.

BUXTON, DERBYSHIRE, DEVONSHIRE HOSPITAL.—Assistant House Physician. Salary £100 per annum, with apartments, board, and laundry.

CARDIFF, KING EDWARD VII. HOSPITAL.—House Surgeon for six months. Salary £30, with board, residence, and laundry.

CARLISLE, CUMBERLAND INFIRMARY.—Resident Medical Officer. Salary at rate of £80 per annum, with board, lodging, and washing.

CENTRAL LONDON OPHTHALMIC HOSPITAL, Gray's Inn-road, W.C.—House Surgeon. Salary at rate of £50 per annum, with board and residence.

CHELTENHAM BOROUGH EDUCATION COMMITTEE.—Assistant Medical Officer of Health and School Medical Officer. Salary £250 per annum.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—House Physician. Salary £80 per annum, with board, apartments, and laundry.

COVENTRY AND WARWICKSHIRE HOSPITAL.—Junior House Surgeon. Salary £90 per annum, with rooms, board, washing, and attendance.

DENBIGH COUNTY.—Medical Officer of Health. Salary £500 per annum.

DUDLEY, GUEST HOSPITAL.—Senior Resident Medical Officer. Salary 100 guineas per annum, with board, residence, attendance, and washing.

DUNDEE ROYAL INFIRMARY.—Non-resident Obstetric Assistant.

DURHAM COUNTY COUNCIL.—Tuberculosis Medical Officer. Salary £500 per annum.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark, London, S.E.—House Surgeon for six months. Salary at rate of £75 per annum, with board, residence, and washing.

GILLINGHAM (KENT) EDUCATION COMMITTEE.—School Medical Officer. Salary at rate of £250 per annum.

GLASGOW MATERNITY AND WOMEN'S HOSPITAL.—Obstetrical Department: Two In-door House Surgeons for six months and Two Out-door House Surgeons for three months. Also Female Out-door House Surgeon at West-End Branch.

GOVAN DISTRICT ASYLUM, Crookston, near Paisley.—Second Assistant Medical Officer, unmarried. Salary £150 per annum, with rooms, board, attendance, and laundry.

HASTINGS, EAST SUSSEX HOSPITAL.—Assistant House Surgeon. Salary at rate of £70 per annum, with residence, board, and washing.

HOSPITAL FOR WOMEN, Soho-square, W.—Resident Medical Officer for six months. Salary at rate of £60 per annum.

KENSINGTON AND FULHAM GENERAL HOSPITAL, Earl's Court, London, S.W.—Resident Medical Officer. Salary at rate of £75 per annum, with board and laundry.

LEAMINGTON SPA, WARNEFORD GENERAL HOSPITAL.—House Physician. Salary £85 per annum, with board, residence, and laundry.

LEICESTER CORPORATION.—Resident Medical Officer at the Isolation Hospital and Assistant Medical Officer of Health. Salary £150 per annum, with board and residence.

LIVERPOOL, ROYAL SOUTHERN HOSPITAL.—Two House Physicians and Three House Surgeons for six months. Salary at rate of £60 per annum, with board and residence, in each case. Also Surgical Registrar and Tutor. Salary £20 per annum.

MACCLESFIELD GENERAL INFIRMARY.—Junior House Surgeon. Salary £80 per annum, with board and residence.

MAIDSTONE, KENT COUNTY ASYLUM.—Fourth Assistant Medical Officer, unmarried. Salary £175 per annum, with quarters, attendance, washing, &c.

MANCHESTER, ANCOATS HOSPITAL.—Assistant House Surgeon. Salary £70 per annum.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—Resident Medical Officer, unmarried. Salary £100 per annum.

MANCHESTER, CHORLTON ON MEDLOCK DISPENSARY.—Resident House Surgeon.

MANCHESTER, MONSALL FEVER HOSPITAL.—Third Medical Assistant Salary £100 per annum, with board, lodgings, and washing.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road.—Assistant Medical Officer. Salary £25 per annum.

MANCHESTER ROYAL EYE HOSPITAL.—Junior House Surgeon. Salary £80 per annum, with residence, board, and washing.

MIDDLESEX HOSPITAL, W.—Assistant Physician to Department for Diseases of the Skin.

NEWPORT AND MONMOUTHSHIRE HOSPITAL.—Resident Medical Officer. Salary at about rate of £100 per annum, with board, residence, and laundry.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Assistant Resident Medical Officer for four months. Salary at rate of £50 per annum, with board, residence, and washing.

QUEEN MARY'S HOSPITAL FOR CHILDREN, Carshalton, Surrey, and PARK HOSPITAL FOR CHILDREN, Hither Green, London, S.E.—Three Assistant Medical Officers. Salaries £150 per annum, with board, lodging, and washing.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Surgeon and House Physician for six months. Salary in each case £30 per annum, with board, residence, and washing.

ROCHDALE INFIRMARY.—Junior House Surgeon, unmarried. Salary £80 per annum, with board, residence, and laundry.

ROYAL NAVAL MEDICAL SERVICE.—Fifteen appointments

ST. GILES PARISH INFIRMARY, Camberwell.—Second Assistant Medical Officer for duty at Gordon-road Workhouse, Peckham, also Third Assistant Officer for Infirmary. Salary of Second Assistant Medical Officer £150 per annum, and Third Assistant Medical Officer £140 per annum, with apartments, board, and washing in each case.

SHEFFIELD ROYAL HOSPITAL.—Assistant House Surgeon and Assistant House Physician, unmarried. Salary £65 and £60 per annum respectively, with board, lodging, and washing. Also Two Honorary Assistant Surgeons.

SHEFFIELD ROYAL INFIRMARY.—Junior Resident Medical Officer. Salary £70 per annum.

SHEFFIELD UNIVERSITY.—Professor of Pathology.

SHREWSBURY, SALOP INFIRMARY (THE COUNTY HOSPITAL).—House Surgeon. Salary £150 per annum, with board, washing, and residence.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—Junior House Surgeon for six months. Salary at rate of £60 per annum, with rooms, board, and washing.

STAFFORD, COTON HILL LUNATIC HOSPITAL.—Assistant Medical Officer, unmarried. Salary £150 per annum, with residence, board, and laundry.

STOCKPORT INFIRMARY.—Two Junior House Surgeons. Salary £30 per annum, with board, washing, and residence.

SUNDERLAND, CHILDREN'S HOSPITAL.—Resident Medical Officer. Salary £80 per annum, with board, residence, and laundry.

SURREY COUNTY COUNCIL EDUCATION COMMITTEE.—Medical Inspector of Children in Elementary Schools. Salary £250 per annum.

THROAT HOSPITAL, Golden-square, W.—Resident House Surgeon. Salary £75 per annum, with board, residence, and laundry.

WALSALL AND DISTRICT HOSPITAL.—House Physician and Casualty Officer. Salary £90 per annum, with board, residence, and laundry.

WARRINGTON INFIRMARY AND DISPENSARY.—Junior House Surgeon for six months. Salary at rate of £100 per annum, with board, lodging, and laundry.

WEST LONDON HOSPITAL, Hammersmith-road, W.—Two House Physicians and Three House Surgeons for six months. Board, lodging, and laundry allowance provided.

WORCESTER COUNTY AND CITY ASYLUM, Powick.—Junior Assistant Medical Officer, unmarried. Salary £160 per annum, with board, apartments, washing, and attendance.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies as Certifying Surgeons under the Factory and Workshop Acts at Corwen, in the county of Merioneth; and at Lisbellaw, in the county of Fermanagh.

Births, Marriages, and Deaths.

BIRTHS.

HERRICK.—On July 26th, at Kasauli, India, the wife of Lieutenant R. de S. B. Herrick, I.M.S., of a son.

MAIDLOW.—On August 15th, at Ilminster, Somerset, the wife of William H. Maidlow, M.D., of a son.

MORLEY.—On August 13th, at Queen-street, Barton-on-Humber, the wife of E. B. Morley, M.B., B.S. Lond., M.R.C.S., L.R.C.P., of a son.

MARRIAGES.

BAXTER—EVERITT.—On August 14th, at St. Andrew's, Wells-street, Staff-Surgeon Charles T. Baxter, Royal Navy, to Margaret Louise, only daughter of Mr. and Mrs. Frank Everitt.

BRIMBLECOMBE—GILL.—At the Parish Church, Wellington, Somerset, on August 21st, 1912, by the Vicar, the Rev. W. W. Pulman, assisted by the Rev. H. C. Launder, Vicar of Nynehead, and the Rev. F. B. Marsland, Rector of Wyberton, Lincs. Stanley Leemore Brimblecombe, M.R.C.S. Eng., L.R.C.P. Lond., eldest son of Mr. W. Brimblecombe, of Eastbrook House, Burlescombe, Devon, to Mary Noel, youngest daughter of the late Mr. W. T. Gill, of Crowndale, Tavistock, Devon.

DEATHS.

BIBBY.—On August 19th, at her residence, Ullet Lodge, Princes Park, Liverpool, in her 48th year, Ellen Mary, widow of the late Dr. John Bibby, formerly of Preston and Kensington, London. Interred at Kensal Green (St. Mary's) Cemetery, London, on Thursday.

DOBBYN.—On August 12th, at Walmer, very suddenly, John Stephen Dobbyn, M.D., F.R.C.S., of Streatham, late Deputy-Inspector-General, R.N. (retired), aged 73 years.

SHEPHERD.—On August 12th, at Kedleston-road, Derby, H. D. Shepherd, M.B., F.R.C.S.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

DEFECTIVE MILK CONDONED.

THE magistrates of East Dereham, Norfolk, at a recent sitting dismissed no less than three summonses in succession, taken out against different farmers and milk dealers in respect of the sale of milk proved to be deficient in milk fat or otherwise not equal to the prescribed standard. In the first case, in which analysis showed that the milk contained 2·73 per cent. of fat, 3 per cent. being the proportion required, the defence was based on the fact that the sample examined had been taken from the morning's milk and from a small can at the end of the defendant's round. It was also stated that the day in question was warmer than has been usual, that in hot weather the cream would rise quickly, and that a portion of the fat churned by the swaying of the cart would adhere to the sides of the can, so that milk remaining to the last at the bottom would be deprived of an appreciable quantity of the fat which it contained earlier. It was urged that samples should be taken from the milk in bulk, and evidence was given as to the feeding of the cows and other matters. The bench in dismissing the summons intimated an opinion that the sample was not taken in circumstances affording a fair test, with regard to which it may be pointed out that from the point of view of an inspector under the Sale of Food and Drugs Act the question to be determined is whether an article of food is being sold in a defective state to the prejudice of the purchaser, not whether in favourable circumstances a better sample than that taken might be produced by the vendor. A second defendant on the same morning sold to the inspector milk in which the proportion of fat was 2·7 per cent. He, like the man already mentioned, was able to show that he had dealt in milk for many years, and that samples of his milk on previous occasions had always been found to be up to the required standard. In this case the milk was not from his own animals, but was purchased from a farmer who gave evidence as to the way in which the cows were fed, and contended, as was done in the preceding case, that milk obtained in the morning was less rich than the evening supply. Both the farmers to whom the cows belonged in these two instances owned separators, but denied that separated milk had been added to that which was sold. In the second case referred to the summons was dismissed, as in the first. In a third case a farmer was the defendant, the sample of milk having been taken on the same morning as in the other cases, and being stated to be deficient in milk solids other than milk fat and also to be adulterated with 9 per cent. of added water. It was contended that the analyst's certificate might describe a condition due to deficiency in the solid constituents of milk, without water having, in fact, been used to increase the bulk. It was also stated that the defendant had never before been found to sell defective milk, and that he then had only four cows "in full profit" out of a larger number; the precise relevancy of which latter fact as tending to exonerate him is not apparent. In this case also the charge was dismissed, with advice from the bench to the defendant to feed his cows a little better. It is to be hoped that even unsuccessful prosecutions such as these may tend to render farmers careful to keep their milk up to the prescribed minimum standard of quality, and that the Norfolk county council may not relax its efforts to maintain the purity of the food supply within its jurisdiction.

THE KAISER AND THE SAUCEPAN.

IT was pointed out some three years ago by a writer in the columns of THE LANCET that one of the not improbable causes of appendicitis was the ingestion of minute fragments of the enamel lining of the saucepan in common use, and there were cited, in illustration, the findings of Italian pathologists at post-mortem examinations of cases of the disease, in several of which the cæcum disclosed the presence of considerable quantities of such fragments, inducing inflammation in the surrounding parts, the appendix in particular. From Germany we have from time to time had reports to the same effect, and now we find something like a "crusade" against the use of such utensils and a return, if not to the good old porcelain lining, at least to that made of some material less brittle and less likely to be broken by rough usage at the hands of careless domestics. On his recent visit to the Seaside Rest-Home for Children at Ahlbeck, the Emperor William, having examined the plans for the new buildings, proceeded to inspect the culinary equipment of the establishment, and, as we learn, "expressed a decided preference for the nickeled over the enamelled saucepans." The imperial preference will, we hope, have the salutary effect of superseding the popular one, attracted as this has hitherto been by the lightness, the cleanness, the elegance, and above all by the cheapness of the enamelled utensil, "made," be it remarked, "in Germany," and imported largely into the British Isles.

If a recent regulation of the Italian sanitary authorities becomes generally adopted, and the saucepan when its enamel lining is damaged, however slightly, is thrown on the scrap-heap, to be replaced by a new one, economy will suggest the use of a less perishable utensil, whether lined, as now in Germany, with nickel, or, as heretofore in England, with porcelain.

RECREATIONS OF MEDICAL MEN.

To the Editor of THE LANCET.

SIR,—An indication as to what are the favourite recreations of one's professional brothers would probably be of interest to medical men.

A recent publication (the *Medical Who's Who*) supplies—as far as it goes—some curious information in that way. I have taken the first 103 pages, one-third of the book, and classified the entries. Many give no information; others are vague—"all sports," "&c.," "various"; these cannot come under any definite heading. The ground covered, though small, may be taken as a fair index for the whole profession.

Golf is an easy first, and the list very well shows how varied are the tastes of our professional brethren. The figures are: Golf, 250; tennis, 131; fishing, 112; shooting, 89; motoring, 87; cycling, 81; yachting (including sailing, rowing, boating), 65; cricket, 52; photography, 52; gardening or horticulture, 44; literature, music, walking, each 41; travelling, 32; hunting, 30; swimming, 23; riding, 22; billiards, 18; mountaineering, 17; football, 16; chess, 15; natural history, 13; painting, 12; archæology, 11; skating, 10; curling or bowling, sketching and stamp collecting, 8 each; 7 each to bridge, hockey, and drill (or Territorial work); croquet 5 and ski-ing 5; 4 each to carpentering, farming, languages, driving, collecting (curios, prints, china); athletics, book-hunting or collecting, ornithology, geology, claim 3 for each; and 2 each for acting, archery, fencing, poultry breeding. One entry only appears under each of the following: Astronomy, aviation, bookbinding, carving, falconry, fire brigade, genealogy, handball, mathematics, modelling, printing, rest, scouting.

Contrast the old-world flavour of "falconry" with up-to-date "aviation"; and what a difference between the simple weariness of "rest" and a list like this: "Exploration, aviation, ballooning, motoring, mountaineering, literature, and practical science." Or this: "Cricket, Rugby football, hockey, tennis, figure skating, croquet, billiards, golf, natural history, &c."

I am, Sir, yours faithfully,

London, S.W., August 17th, 1912. MARTIN F. CUSACK.

*** The contents of the *Medical Who's Who* hardly form an index of the medical profession.—ED. L.

HEALTH OF JAMAICA.

THE Acting Governor of Jamaica has issued an order under Section 6 of the Infective Diseases Notification Law, 1912, which applies in the whole island to the diseases of septicæmia other than puerperal. The order, being an emergency one, came into force three days after its publication in the Jamaica Gazette on July 11th. A number of by-laws made under the Health Law, 1910, by the Local Board of Health of the Parish of St. Mary, Jamaica, have been confirmed by the Acting Governor. These by-laws affect the removal of refuse, the provision of sanitary conveniences and privies, water-supply, overcrowding, and so forth, as well as the regulation of dairies, cowsheds, and the milk-supply generally.

A MEDICAL correspondent in the United States wishes to purchase a copy of "Observations on Insanity," by Thomas Arnold, M.D., published in London in 1782, if it can be obtained at a reasonable cost. We hope some reader of THE LANCET may be able to help him; we no longer have a copy.

WE are informed by Messrs. Thomas Cook and Son that arrangements have been made by them to conduct a limited party to the Sixth International Congress of Obstetrics and Gynæcology at Berlin, Sept. 9th to 13th, thus obviating the petty worries which so often attend independent travel. All necessary train and hotel reservations will be made by them, the inclusive fare being 11 guineas, with slight extra amounts for certain special advantages. Early registration is requested, and those who think of availing themselves of this opportunity should obtain particulars from Messrs. Thomas Cook and Son at the earliest possible date.

Surgeon.—There is a great variety of opinion still with regard to the administration of tuberculin. Special demonstrations on the point will shortly be delivered at the Brompton Hospital for Consumption and Diseases of the Chest, and much clinical and experimental work is being carried out in many centres. No one at present should speak as positively as our correspondent.

ERRATUM.—In the paper on "A New Method of Demonstrating the Presence of Bacillus Coli in Sewage-polluted Water," by Dr. G. Carrington Purvis, in our last issue, the words "far more vigorously" at the end of the second paragraph on p. 439, should have been "far less vigorously."

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

A DIARY OF CONGRESSES.

WE shall publish this diary from time to time that our readers may have under their hands the dates of the approaching scientific Congresses. It is unnecessary to issue the lists of all these functions week by week, and we propose to make only such gatherings as will occur in the immediate future the subject of regular announcement. The following Congresses, Conferences, and Exhibitions are announced for August and September:—

May to October (London, Earl's Court).—Shakespeare's England.
Aug. 6th-27th (Balkans, Turkey, Greece).—Ninth Annual Congress of the Association Internationale de Perfectionnement Scientifique (A.P.M.).
,, 8th-30th (Central Europe).—Medical Study Tour ("A.P.M."), starting at Besançon.
,, 24th-Sept. 9th (Toronto).—Canadian National Exhibition.
Sept. 1st-14th (France).—Voyage d'Etudes Médicales.
,, 2nd-7th (Wrexham).—Welsh National Eisteddfod.
,, 3rd-6th (Breslau).—Thirty-seventh Meeting of the German Association for Care of Public Health.
,, 4th (Washington, D.C.) and Sept. 6th-13th (New York). Eighth International Congress of Applied Chemistry.
,, 4th-11th (Dundee).—British Association.
,, 7th (Departure from Hamburg).—German Medical Study Trip to North America.
,, 8th and 9th (Zürich).—Congress of Psychiatry and Psychotherapy.
,, 8th-11th (London, Royal Agricultural Hall).—Dairy Show.
,, 9th (probable opening date) (Geneva).—International Congress of Anthropology and Prehistoric Archeology.
,, 9th-10th (San Sebastian).—Third Spanish Congress of Tuberculosis.
,, 10th-12th (Berlin).—Sixth International Congress of Obstetrics and Gynæcology.
,, 15th-21st (Münster).—Eighty-fourth Meeting of the German Association of Scientists and Medical Practitioners.
,, 23rd-25th (Toulouse).—"Cold" Congress. (Cold Storage and Cryologic Methods.)
,, 23rd-28th (Washington, D.C.).—Fifteenth International Congress on Hygiene and Demography.
,, 24th-27th (Detroit).—Fourteenth Annual Meeting of the American Hospital Association.
,, 27th-29th (Hamburg).—Sixth Annual Meeting of the German Society of Specialists in Nerve Diseases.
,, (Toronto).—Second Annual Meeting, Canadian Public Health Association.
September or October (Perth, Western Australia).—(Three days.) Health Congress.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 10.30 A.M., Mr. Addison: Demonstration of Minor Operations. 12 noon, Dr. Bernstein: Pathological Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Mr. Bidwell: Surgical Treatment of Gastric Ulcer.

TUESDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 10.30 A.M., Mr. T. Gray: Demonstration of Fractures, &c. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations on the Throat, Nose, and Ear. 10.30 A.M., Surgical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women. 5 P.M., Lecture:—Dr. Simson: Acute Conditions of the Fallopian Tubes.

THURSDAY.—10 A.M., Dr. Simson: Gynæcological Demonstration. 12.15 P.M., Lecture:—Dr. G. Stewart: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Mr. Dunn; Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 10.30 A.M., Lecture:—Dr. Owen: Practical Medicine. 12.15 P.M., Lecture:—Dr. Bernstein: Clinical Pathology. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. Pritchard: Infective Arthritis.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. Bishop Harman: Diseases of the Eye. 2 P.M., Medical and Surgical Clinics. X Rays. Operations.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON), Clinical Theatre, London Hospital, Mile End-road, E.

MONDAY.—2.15 P.M., Demonstration in Clinical Medicine:—Dr. Wall: Diseases of the Pleura.

TUESDAY.—2.15 P.M., Demonstration in Clinical Medicine:—Dr. Grünbaum; Diseases giving rise to Morbid Renal Excretion.

WEDNESDAY.—2.15 P.M., Demonstration in Clinical Medicine:—Dr. Hutchison: Diseases of Children.

THURSDAY.—2.15 P.M., Demonstration in Clinical Medicine:—Dr. Thompson: Diseases of the Nervous System.

FRIDAY.—2.15 P.M., Demonstration in Clinical Medicine:—Dr. L. Smith: Diseases of the Heart.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (26th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's 1.30 P.M.), Children, Gt. Ormond-street (9 A.M.) St. Mark's (2.30 P.M.), Central London Throat and Ear (Minor 9 A.M., Major 2. P.M.).

TUESDAY (27th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.) Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan 9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.), Royal National Orthopædic (9.30 A.M. and 4 P.M.).

WEDNESDAY (28th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2 30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (29th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal National Orthopædic (9 A.M. and 3.30 P.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

FRIDAY (30th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Royal National Orthopædic (3.30 P.M.), Soho-square (2 P.M.), Children, Gt. Ormond-street (9 A.M.), Aural, (2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

SATURDAY (31st).—Royal Free (9 A.M), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the West London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic (2 P.M.) Hospital operations are performed daily.

EDITORIAL NOTICES.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. I. of 1912, which was completed with the issue of June 29th, were given in THE LANCET of July 6th.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1912 are now ready. Bound in cloth, gilt lettered, price 16*s.* carriage extra.

Cases for binding the half-year's numbers are also ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*

To be obtained on application to the Manager, accompanied by remittance.

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THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

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SOLE AGENTS FOR AMERICA—MESSRS. WILLIAM WOOD AND CO., 51, Fifth Avenue, New York, U.S.A.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, August 21st, 1912.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Aug. 15	29·71	W.	0·05	79	62	51	54	57	Dull
,, 16	30·01	S.W.	...	112	69	52	55	58	Cloudy
,, 17	29·98	W.	0·05	98	65	58	58	62	Cloudy
,, 18	29·71	S.W.	0·03	110	68	57	59	63	Cloudy
,, 19	29·65	S.W.	0·06	112	68	56	57	59	Cloudy
,, 20	29·55	S.W.	0·50	107	66	54	56	59	Cloudy
,, 21	29·98	W.	0·07	107	61	49	51	55	Fine

The following journals, magazines, &c., have been received.—Journal of Nervous and Mental Disease, Office International d'Hygiène Publique, Pacific Medical Journal, Medical Chronicle, Transvaal Medical Journal, Canadian Practitioner, Medical Review of Reviews, Archiv für Experimentelle Pathologie und Pharmakologie, Indian Ambulance Gazette, Cleveland Medical Journal, Interstate Medical Journal, Deutsche Zeitschrift für Nervenheilkunde, Revista de los Hospitales, Dublin Journal of Medical Science, Local Government Review, Annals of Tropical Medicine and Pathology, South African Medical Review, American Medicine, Journal d'Urologie, Albany Medical Annals, British Journal of Dental Science.

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